SPRINTER125 EFI & DY125 EFI

SERVICE MANUAL

201404

Foreword

This service manual contains the technical data of each component inspection and repair for the DAYTONA DY125 / Sprinter 125 Motorcycle. The manual is shown with illustrations and focused on “Service Procedures”, “Operation Key Points”, and “Inspection Adjustment” so that provides technician with service guidelines.

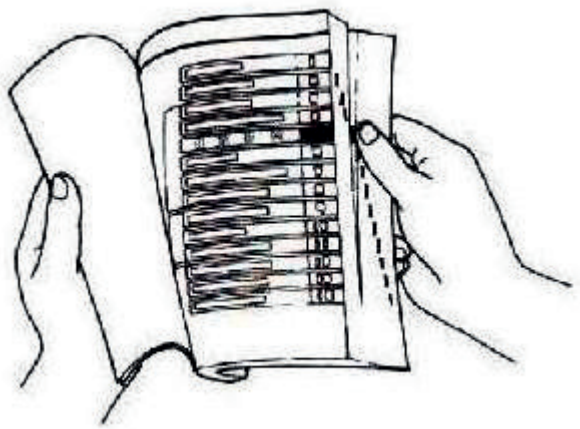
If the style and construction of the motorcycle, DY/Sprinter 125 CBS, are different from that of the photos, pictures shown in this manual, the actual vehicle shall prevail. Specifications are subject to change without notice.

Service Department

How to Use This Manual

This service manual describes basic information of different system parts and system inspection & service for DAYTONA DY/Sprinter 125 cub. In addition, please refer to the manual contents in detailed for the model you serviced in inspection and adjustment.

The first chapter covers general information and trouble diagnosis.
The second chapter covers service maintenance information.
Th third to the twelfth chapter covers the engine and driving systems.
The thirteenth to the sixteenth is contained the parts set of assembly body.
The seventeenth chapter is electrical equipment.
The eighteenth chapter is wiring diagram.
Please see index of content for quick having the special parts and system information.



There are 4 buttons, “Foreword”, “Contents”, “How to Use This Manual” and “Mechanism Illustration” in the PDF version, and can be access to these items by clicking on the buttons.
If user wants to look for the content of each chapter, selecting the words of each chapter on the contents can reach to each chapter. There are two buttons, “Homepage and contents, on the top line of first page of the each chapter. Thus, if the user needs to check other chapters, he can click the top buttons to back the homepage or contents. The content of each chapter can be selected too. Therefore, when needs to checking the content inside of the chapter, click the content words of the chapter so that can back to the initial section of the content. In addition, there is a “To this Chapter Contents” button at the second page of each content so that clicking the button can back to the contents of this chapter.

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1、General Information

Technical Parameter List（Sprinter 125）

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<tr><td rowspan="4">Exterior Dimension</td><td colspan="2">Overall Length</td><td>1900 mm</td><td rowspan="2">Suspension System</td><td>Front</td><td>Telescopic Type</td></tr>
<tr><td colspan="2">Overall Width</td><td>720 mm</td><td>Rear</td><td>Swing Arm Type</td></tr>
<tr><td colspan="2">Overall Height</td><td>1080 mm</td><td rowspan="2">Tyre</td><td>Front</td><td>2.50-17</td></tr>
<tr><td colspan="2">Wheelbase</td><td>1230 mm</td><td>Rear</td><td>2.75-17</td></tr>
<tr><td rowspan="6">Weight</td><td rowspan="3">Curb Weight</td><td>Front Wheel</td><td>42 kg</td><td rowspan="2">CBS</td><td>Front</td><td>Disc (φ240 mm)</td></tr>
<tr><td>Rear Wheel</td><td>62 kg</td><td>Rear</td><td>Disc（φ190mm）</td></tr>
<tr><td>Whole</td><td>104 kg</td><td rowspan="2">Performance</td><td>The Maximum Speed</td><td>＞85 km/h</td></tr>
<tr><td colspan="2">Rated Passengers/Weight</td><td></td><td>Climbing Ability</td><td>≥18°</td></tr>
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<tr><td colspan="2">Displacement</td><td>120 cc</td><td>HC</td><td>＜380 mg/km</td></tr>
<tr><td colspan="2">Compression ratio</td><td>9.0 ： 1</td><td>NOx</td><td>＜70 mg/km</td></tr>
<tr><td colspan="2">Maximum Power</td><td>6kw /8000 rpm</td><td colspan="2">E.E.C.</td><td>/</td></tr>
<tr><td colspan="2">Maximum torque</td><td>8.4 N • m/6000 rpm</td><td colspan="2">P.C.V.</td><td>/</td></tr>
<tr><td colspan="2">Ignition method</td><td>ECU Ignition</td><td colspan="2">Catalytic reaction control system</td><td>/</td></tr>
<tr><td colspan="2">Starting System</td><td>Electric starting and feet starting</td><td colspan="3"></td></tr>
</table>

Technical Parameter List（DY125）

Manufacture				Model Type		DY125
Exterior Dimension	Overall Length		1905 mm	Suspension System	Front	Telescopic Type
	Overall Width		715 mm		Rear	Swing Arm Type
	Overall Height		1060 mm	Tyre	Front	2.50-17
	Wheelbase		1115 mm		Rear	2.75-17
Weight	Curb Weight	Front Wheel	42 kg	CBS	Front	Disc (φ240 mm)
		Rear Wheel	59 kg			
		Whole	101 kg		Rear	Disc（φ190mm）
	Rated Passengers/Weight		2/145 kg	Performance	The Maximum Speed	＞85 km/h
	Overall Weight	Front Wheel	71kg		Climbing Ability	≥18°
		Rear Wheel	175 kg	Reduction	Primary	Gear
		Whole	246kg		Secondary	Gear
Engine	Type		Four Stroke Engine		Clutch	Centrifugation, Wet
	The Installation Arrangement		Horizontal, 10° Oblique		Transmission	Gear
	Fuel		Ethanol gasoline of E 92#	Odometer		0~140 km/h
	Cycle/Cooling Method		Four Stroke/Air Cooling	Horn		100 ~110 dB（A）
	Cylinder	Cylinder Diameter	φ52.4 mm	Exhaust Muffler		Vibration Resistant
		Travel	55.5 mm	The exhaust pipe position and		Right Side, Back
		Cylinder Number/Distribution	Single cylinder	Lubrication system		Pressure, splash
	Displacement		120 cc	Exhaust Gas Concentration	CO	＜1140 mg/km
	Compression ratio		9.0 ： 1		HC	＜380 mg/km
	Maximum Power		6kw /8000 rpm		NOx	＜70 mg/km
	Maximum torque		8.4 N • m/6000 rpm	E.E.C.		/
	Ignition method		ECU Ignition	P.C.V.		/
	Starting System		Electric starting and feet starting	Catalytic reaction control system		/

The torque value

Followings are most important torque values, if any value cannot be found please check standard values.

Reference Stardard Torque Value

Item	Company rules torque (N • m)	Standard value (N • m)
M5 Bolt and Nut	4.4-6	5
M6 Bolt and Nut	8-12	10
M8 Bolt and Nut	18-25	20
M10 Bolt and Nut	29-39	35
M12 Bolt and Nut	49-59	55
M5 Screw	3.4-5	4
M6 Screw and Flange Face Bolt (Sh Type)	7-11	8
M6 Flange Face Bolt and Nut	10-14	12
M8 Flange Face Bolt and Nut	24-29	25
M10 Flange Face Bolt and Nut	34-44	40
ST3.5 Tapping Screw	1.1-1.5	1.3
ST3.9 Tapping Screw	1.3-1.8	1.5
ST4.2 Tapping Screw	1.5-2.0	1.7
ST4.8 Tapping Screw	2.1-3.0	2.5

The Torque Value of Engine

No.	Item	Thread Spec (mm)	Torque Value (N • m)	Standard value (N • m)
I	Cylinder head, cylinder body			
1	Cylinder Head Cover Cap Nut	M7×1.0	12 ～ 16*	14
2	Cylinder Head Cover Cap Nut	M6	8 ～ 12*	10
3	Cylinder Head Cap Nut	M8	20 ～ 30*	22
4	Cylinder Head Cap Nut	M8	18 ～ 22*	20
5	Cylinder Head Nut	M8	30 ～ 40*	35
6	Valve Cover	M30×1.5	10 ～ 15	12
7	Valve Cover	M45×1.5	20 ～ 25	22
8	Valve Cover Fixing Bolt	M6	8 ～ 12	10
9	Valve Adjusting Bolt	M5×0.5	7 ～ 11*	9
10	Valve Adjusting Nut	M6×0.75	8 ～ 12*	10
11	Cylinder Head Right Cover Bolt	M6	8 ～ 12	10
12	Cylinder Head Left Cover Bolt	M6	8 ～ 12	10
13	Spark Plug	M10×1.0	10 ～ 15*	12
14	Cylinder Head, Cylinder Body Side Bolt	M6	8 ～ 12	10

15	Cylinder Head Side Bolt	M8	30～ 40	35
16	Cylinder Head Cover Bolt	M6	13 ～ 18	16
17	Cylinder Head Stud	M6	8 ～ 12	10
18	Cylinder Head Stud	M8	18 ～ 22	20
19	Cylinder Head Stud	M8	10 ～ 16	14
20	Cam and Rocker Arm Shaft Clamp Bolt	M6	8 ～ 12	10
21	Spring Fore-set Fixing Bolt	M6	8 ～ 12	10
22	Cylinder Cover Bolt	M6	8 ～ 12	10
23	Upper Rocker Arm Installation Bolt	M8	40 ～ 55	50
24	nlet Pipe Fixing Bolt	M6	6 ～ 10	8
25	Inlet Pipe Stud	M6	8 ～ 12	10
II	Timing System			
1	Timing Driven Sprocket Bolt	M5	7 ～ 11	9
2	Timing Driven Sprocket Bolt	M6	8 ～ 12	10
3	Guide Roller Pin Shaft	M8	8 ～ 12	10
4	Chain Tensioner Arm Spindle	M8×1.25	13 ～ 18	15
5	Oil Pump Sprocket Shaft	M6	2 ～ 6	4
6	Roller Pin	M6	8 ～ 12	10
7	Tensioner Rod Sealing Plug	M14×1.5	20 ～ 25	23
8	Tensioner Fixing Bolt	M6	8 ～ 12	10
9	Clamp A/B Fixing Bolt	M6	8 ～ 12	10
10	Chain Adjusting Plate Fixing Bolt	M6	8 ～ 12	10
11	Chain Tensioner Adjusting Bolt	M6	8 ～ 12	10
III	Clutch			
1	Clutch, Oil Filter Screw End Cover Screw	M5	4 ～ 9	5
2	Primary Clutch, Oil Filter Lock Nut	M14×1.0	40 ～ 45*	42
3	Clutch Lock Nut	M14×1.0	40 ～ 45*	42
4	Drain Cover Bolt	M6	8 ～ 12	10
5	Clutch Spring Bolt	M6	10 ～ 15	12
6	Oil Filter Lock Nut	M16×1.5	40 ～ 50	42
7	Driving Plate Fixing Nut	M12×1.25	50 ～ 60*	55
8	Belt Pulley Fixing Nut	M12×1.25	50 ～ 60*	55
9	Driving Plate Fixing Nut	M10×1.25	35 ～ 45*	38
IV	Oil Pump			
1	Oil Pump Fixing Screw	M6	5 ～ 10	9
2	Oil Pump Cross Head Screw	M6	6 ～ 10	9
3	Oil Pump Shaft Fixing Nut	M6	8 ～ 12	10
4	Oil Separator Fixing Bolt	M6	8 ～ 12	10
V	Magneto			
1	Rotor Fixing Nut	M10×1.25	38 ～45*	42

2	Rotor Fixing Nut	M12×1.25	52 ～ 63*	55
3	Stator Fixing Nut	M6	8 ～ 12	10
4	Pressure Plate Bolt	M5	4 ～ 10	5
5	Trigger Fixing Bolt	M5	4 ～ 10	5
6	Magneto Clip Fixing Bolt	M6	8 ～ 12	10
7	Magneto Coil Fixing Bolt	M5	4 ～ 10	5
VI	Starting Mechanism			
1	Oil Separator Plate Fixing Screw	M6	8 ～ 12	10
2	Starting Clutch Fixing Screw	M6	8 ～ 12	10
3	Starting Clutch Fixing Bolt	M6	8 ～ 12	10
4	Starting Sprocket Fixed Plate Bolt	M6	8 ～ 12	10
5	Kick Starter Arm Fixing Bolt	M6	8 ～ 12	10
6	Starting Motor Fixing Bolt	M6	8 ～ 12	10
7	Starting Clutch Fixing Nut	M20×1.0	80 ～ 90*	84
8	Starting Clutch Fixing Nut	M22×1.0	80 ～ 90*	84
VII	Cooling System			
1	Fan Fixing Bolt	M6	6 ～ 10	8
2	AB Cover Self-tapping screw	ST4.8	1 ～ 3	2. 5
VIII	Transmission Mechanism			
1	Driving Sprocket Fixed Plate Fixing Bolt	M6	10 ～ 15*	12
2	Gear Box Cover Fixing Bolt	M8	20 ～ 25	22
IX	Gear Shift Mechanism			
1	Positioning Plate Comp. Bolt	M6	8 ～ 12	10
2	Gearshift Drum Baffle Bolt	M6	14 ～ 20	17
3	Gearshift Drum Gear Sfixing Bolt	M6	8 ～ 12	10
4	Shift Arm Positioning Bolt	M8×1.0	25 ～ 35	30
X	Transmission Case			
1	Crankcase Box and Cover Bolt	M6	8 ～ 12	10
2	Right Trade Mark Cover Screw	M6	6 ～ 10	8
3	Right Trade Mark Cover Bolt	M6	6 ～ 10	8
4	Clutch Adjusting Nut	M8	9 ～ 15	12
5	Oil Scale Plug	M20×2.5	6 ～ 12	8
6	Timing Plug Screw	M14×1.5	2 ～ 5	3
7	Timing Plug Screw	M14×1.5	8 ～ 12	10
8	Magneto Cap	M30×1.5	2 ～ 5	3
9	Magneto Cap	M30×1.5	8 ～ 12	10
10	Gear Display Contact Fixing Bolt	M6	6 ～ 10	8

11	Cylinder Head Stud A/B	M6	8 ～ 12	10
12	Cylinder Head Stud A/B	M8	18 ～ 22	20
13	Drain Bolt	M12×1.5	24 ～ 28	25
14	Drain Bolt (Outside Oil Screen)	M30×1.5	10 ～ 15	12
15	Bearing Pressure Plate Bolt	M6×1.0	8 ～ 12	10
16	Drain Bolt (Outside Oil Screen)	M36×1.5	10 ～ 15	12
17	Pressure Pin Body Bolt	M6	8 ～ 12	10
18	Camshaft Stop Plate Bolt	M6	6 ～ 10	8
19	Secondary Filter Cover Fixing Bolt	M6	8 ～ 12	10
20	Left Crankcase Cover Plate Fixing Bolt	M5	4 ～ 10	5
21	Right Crankcase Cover Oil Pressure Switch	M10×1.0	18 ～ 22	20
22	Pressure Relief Valve Fixing Bolt	M6	8 ～ 12	10
23	Hydraulic Line Pressure Plate Bolt	M5	4 ～ 10	5
24	Main Stand Hook Pin	M12×1.5	40 ～ 50*	45
25	Gear Box Oil Injection Bolt	M8	20 ～ 25	22
26	Gear Box Drain Bolt	M8	20 ～ 25	22
27	Hydraulic Line Pressure Plate Bolt	M5	4 ～ 10	5

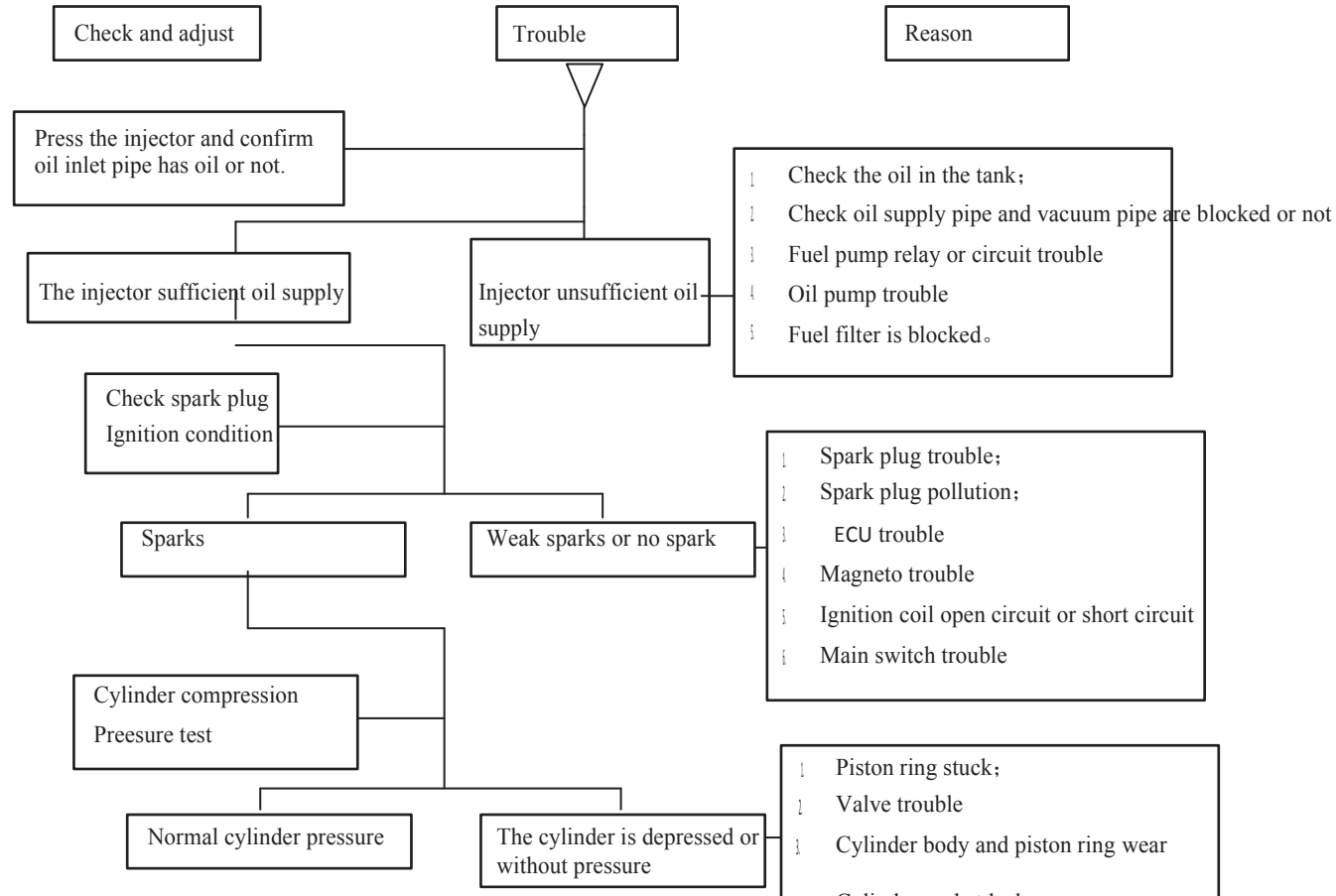
Frame torque value

No.	Item	Thread Spec (mm)	Company rules torque (N·m)	Standard value (N·m)	Note
I	**Frame Assy.**				
1	Engine Upper Suspension Bolt	**M8**	**29 ～ 39**	**34**	
2	Engine Bottom Suspension Bolt	**M8**	**25 ～ 34**	**30**	
3	Front Fork And Handlebar Conneting Nut	**M10×1.25**	**69 ～ 78**	**74**	
4	Front Fork Steering Stem Locking Nut	**M26×1.0**	**59 ～ 88**	**74**	
5	Front Fork Steering Stem Adjusting Nut	**M26×1.0**	**2 ～ 3**	**2.5**	
6	Rear Shock Absorber Mounting Nut （Upper）	**M10×1.25**	**29～ 39**	**34**	
7	Rear Shock Absorber Mounting Nut （Bottom）	**M10×1.25**	**29～ 39**	**34**	
8	Rear Fork Shaft Nut	**M10×1.25**	**34 ～ 44**	**40**	
9	Small Pedal Mounting Bolt	**M8×1.25**	**20 ～ 25***	**22**	
10	Rear Carrier and Frame Connecting Bolt	**M8×1.25**	**20 ～ 25***	**22**	
II	**Handlebar Assy.**				
1	Split Handlebar Connecting Bolt	**M8×1.25**	**25 ～ 35***	**30**	
2	Brake Handlebar Connecting Bolt	**M5**	**4 ～ 8**	**5**	
3	Brake Handlebar Connecting Bolt	**M6**	**8 ～ 12**	**10**	
4	Disc Brake Upper Connecting Bolt	**M6**	**8 ～ 12**	**10**	
5	Disc Brake Lower Connecting Bolt	**M8×1.25**	**27 ～ 33**	**30**	
III	**Front Wheel Front Suspension**				
1	Front Shock Absorber Top Screw	**M20×1.5**	**9 ～ 13***	**11**	
2	Front Shock Absorber Bottom Screw	**M8×1.25**	**18～ 25***	**19.5**	
3	Front Fork and Absorber Connecting Bolt	**M10×1.25**	**40 ～ 50***	**45**	
4	Front Wheel Axle Nut	**M12×1.25**	**44 ～ 54**	**50**	Self-locking nut
5	Brake Disc Fastening Bolt	**M6**	**8～ 12**	**10**	
6	Brake Disc Fastening Bolt	**M8×1.25**	**27 ～ 33**	**30**	
7	Spoke Cap	**BC2.6**	**1.47 ～ 3.43**	**2.4**	
IV	**Rear Suspension Drive Assy.**				
1	Rear Wheel Axle Nut	**M12×1.25**	**44～54**	**50**	Self-locking nut
2	Rear Wheel Axle Left Side Nut	**M17×1.5**	**40～ 50***	**44**	
3	Driven Sprocket Fastening Nut	**M8×1.25**	**30 ～ 35***	**32**	

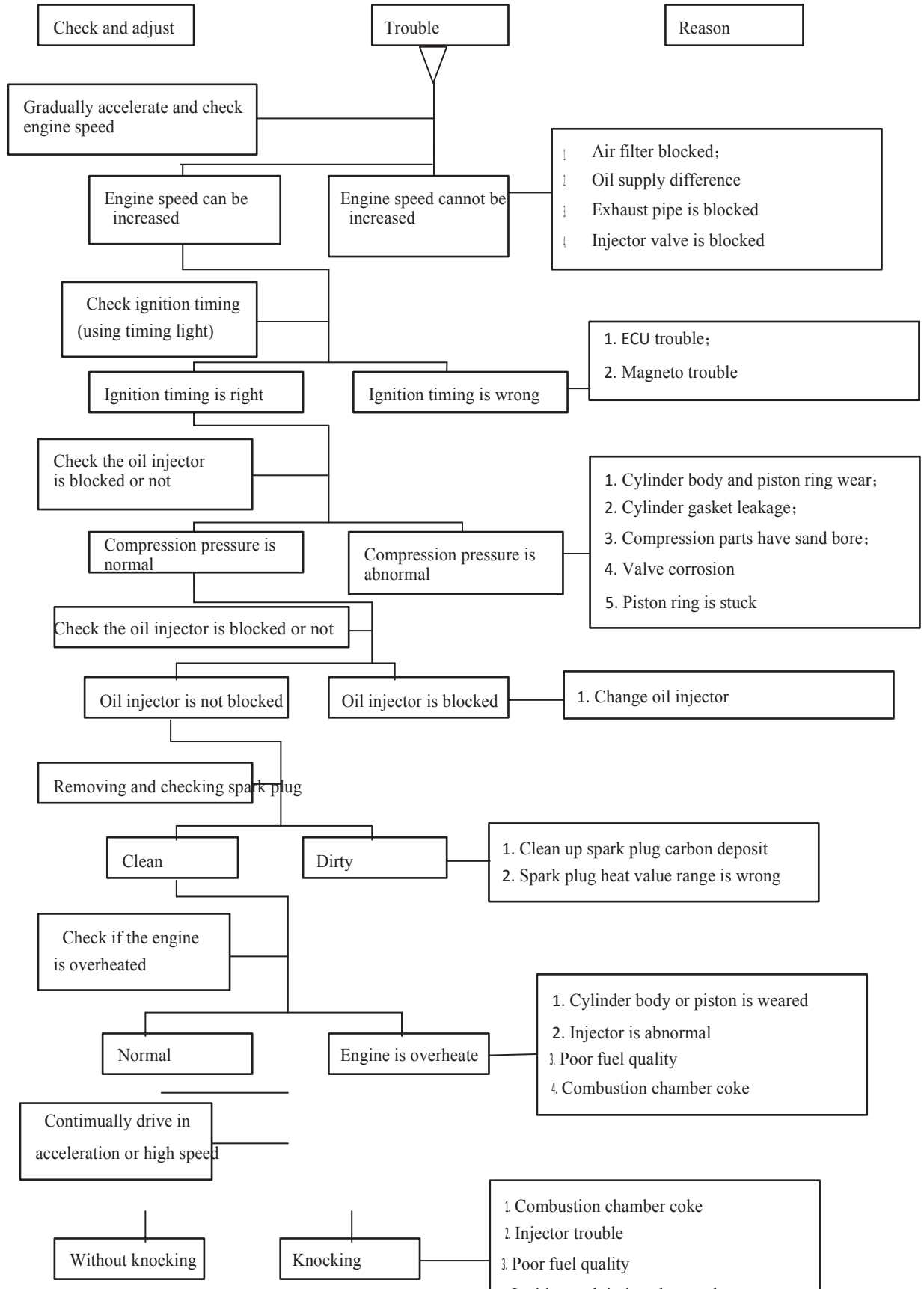
4	Driven Sprocket Fastening Bolt	**M8×1.25**	**30 ～ 35***	**32**	
5	Chaincase assembly bolt	**M6**	**6 ～ 10**	**10**	
V	**Engine Accessories**				
1	Inlet Pipe Bolt	**M6**	**8 ～ 12***	**10**	
2	Gearshift Pedal Bolt	**M6**	**8 ～ 12***	**10**	
3	Kick Start Arm Bolt	**M6**	**8 ～ 12***	**10**	
4	Kick Start Arm Bolt M8	**M8**	**18 ～25***	**22**	
5	Exhaust Muffler and Engine Connecting Bolt, Nut	**M6**	**8 ～ 12***	**10**	
6	Exhaust Muffler and Engine Connecting Bolt, Nut	**M8×1.25**	**20 ～ 30**	**25**	
7	Exhaust Muffler and Frame Connecting Bolt, Nut	**M6**	**8 ～ 12**	**10**	
8	Exhaust Muffler and Frame Connecting Bolt, Nut	**M8×1.25**	**20 ～ 30**	**25**	
9	Exhaust Muffler and Frame Connecting Bolt, Nut	**M10×1.25**	**30 ～ 40**	**35**	
VI	**Vehicle Accessories**				
1	Side Bracket Connecting Bolt	**M10×1.25**	**30 ～ 40**	**35**	
2	Side Bracket Connecting Nut	**M10×1.25**	**30 ～ 40**	**35**	
3	Pedal Side Bracket and Engine Connecting Nut	**M8×1.25**	**18 ～ 25**	**22**	
4	Main support Shaft	**M8×1.25**	**18 ～ 25**	**22**	

Trouble shooting

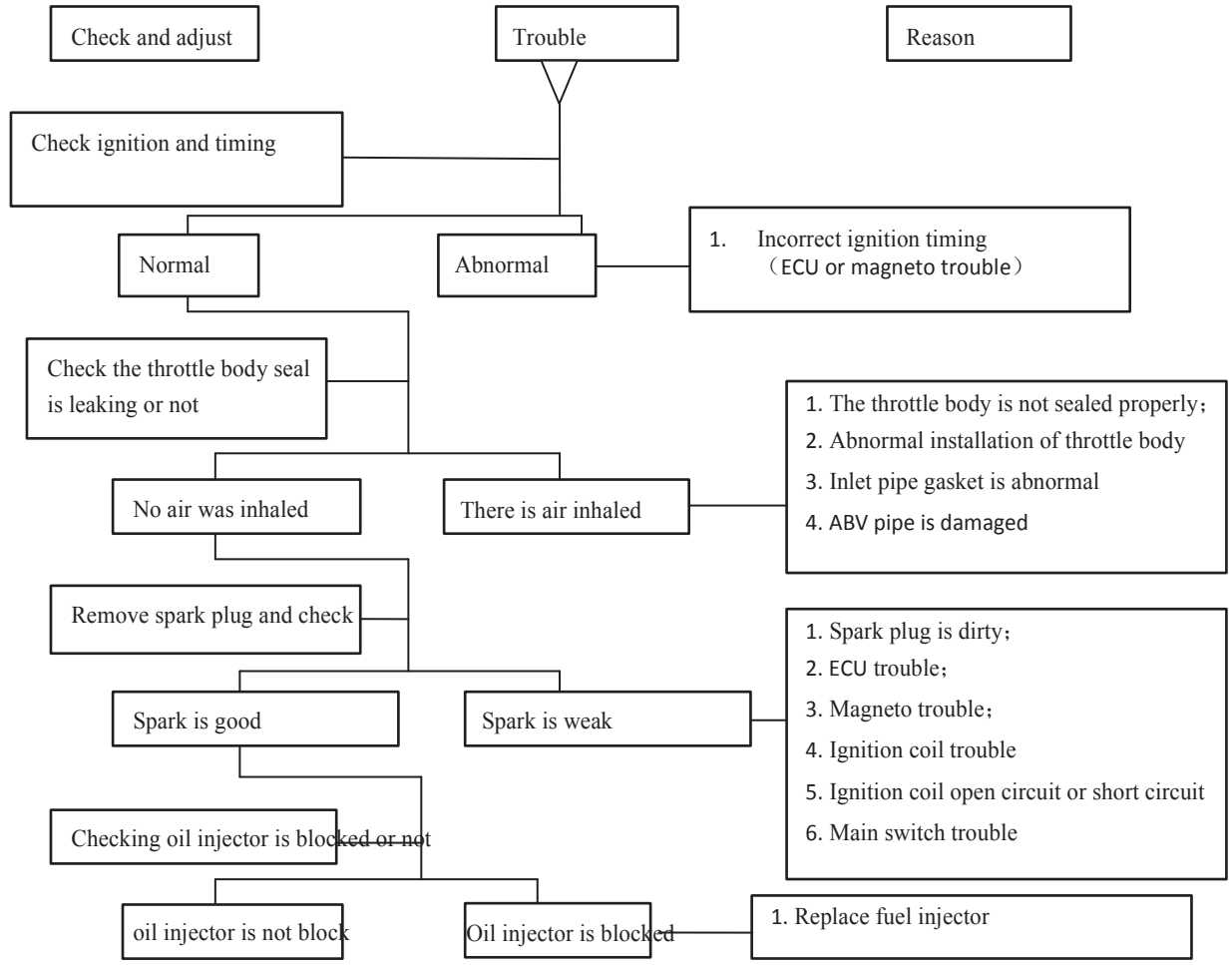
A. Engine cannot star or start difficult



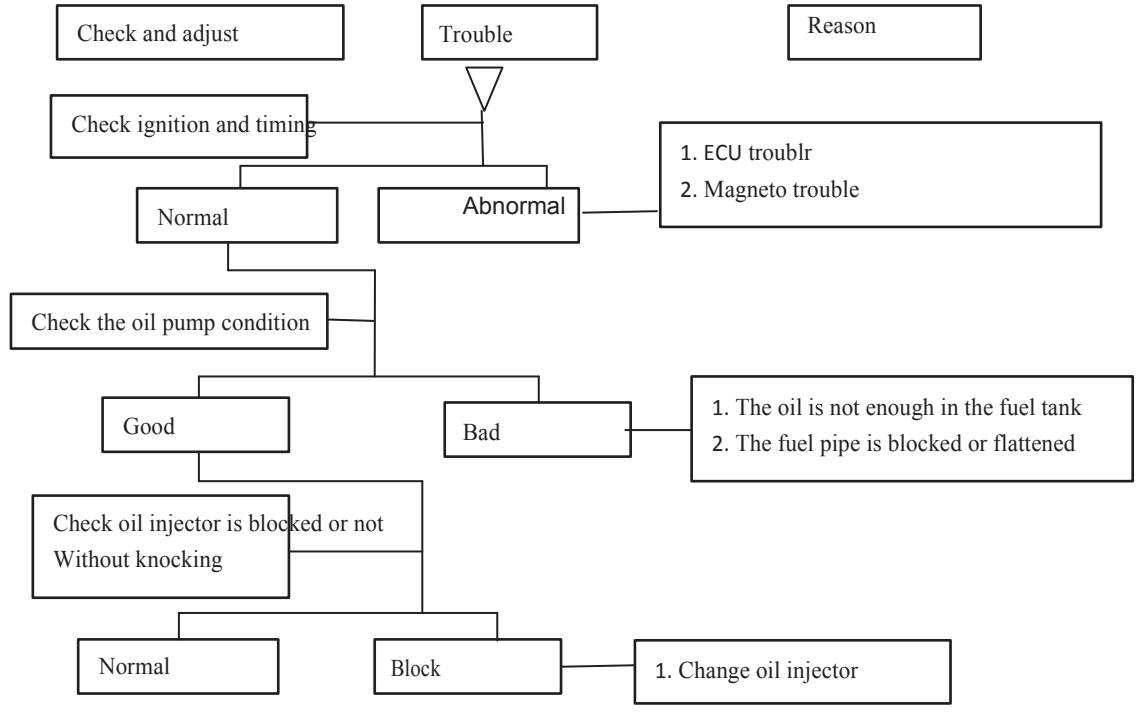
B、 The engine runs poorly (cannot speed up or power lack)



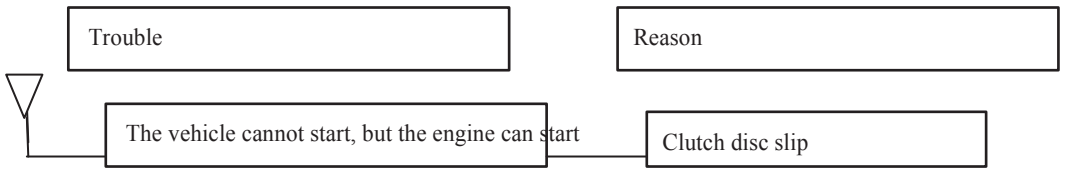
C。 The engine runs poorly (especially during low- speed and idling operation)



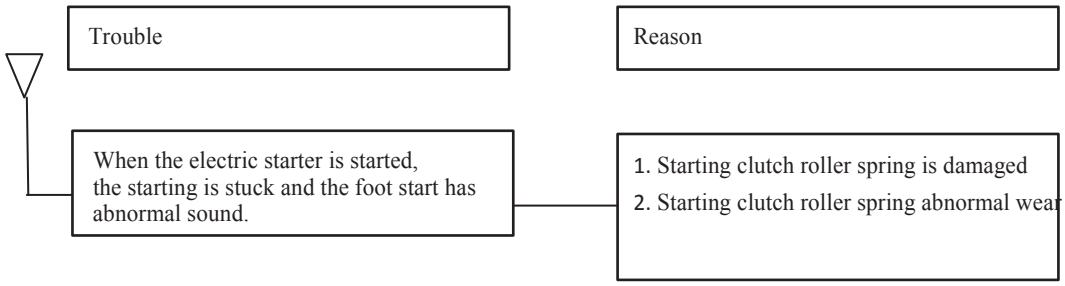
D。 The engine runs poorly（High speed）



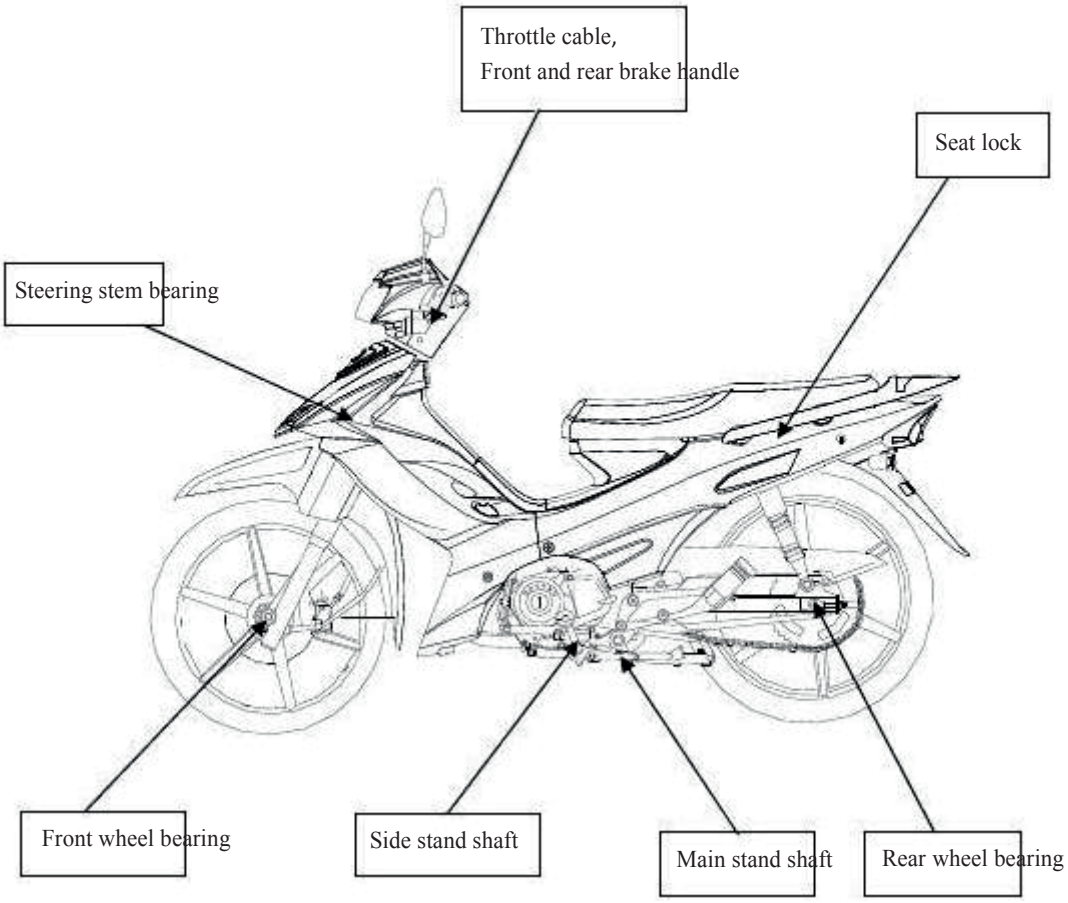
E. Starting clutch



F. Starting clutch



Lubricating points



2. Maintenance and Service

（**1**）Basic parameter

Model		Sprinter 125	DY125
Fuel Tank Capacity		3.5 L	
Engine Oil Capacity		New Machine：0.9 L，Change：0.8L	
Spark Plug		B8RTC（0.6~0.7mm）	
Idling Speed		1500±100 rpm	
Valve clearance	Intake Valve	0.05 mm	
	Exhaust Valve	0.05 mm	
Tyre Specs	Front Wheel	2.50-17	
	Rear Wheel	2.75-17	
Tyre Pressure（cold state）	One-man drive	Front Wheel 200kPa，Rear Wheel 225kPa	
	One passenger	Front Wheel 225kPa，Rear Wheel 250kPa	
Battery Specs		12V 6Ah	12V 5Ah

（**2**）maintenance period

Periods / Item	Mileages	Mileage of Odometer（km）					
	km	500	1000	4000	8000	12000
	Time	Mon.			6	12	18
※Fuel system				I	I	I	I
※Throttle controlling system				I	I	I	I
Air cleaner					C	C	R
Spark plug					I	I	R
※Valve clearance				I	I	I	I
Lubricating oil			R	R	R once per 2000 km 1		
※Oil screen				C	C	C	C
Throttle valve operation					I	I	I
Fuel pump screen		R per 48,000km					
Driving chain	I per Mon .		I, L per 500km driving				
※Fuel evaporations exhaust							I
Battery				I	I	I	I
Braking shoe & pad wear					I	I	I
Braking fluid					I	I	I
※Braking system				I	I	I	I
※Braking light switch					I	I	I
※Headlight					I	I	I
※※Clutch system				I	I	I	I
Side stand					I	I	I
※Cushions					I	I	I
※nut, bolt, fastener				I		I	
※※ Wheel, spoke				I	I	I	I
※※ Steering head bearing				I			I

Vehicle must be serviced according to maintenance and service schedule. Symbols in the schedule stand for：

I: Inspecting, cleaning, adjusting, lubricating or replacing

C: Cleaning R: Replacing A: Adjusting L: Lubricating

※ Means that item must be served by your dealer, if you have tools and ability, you could do it yourself.

※※Means that item only be serviced by your dealer for your safety.

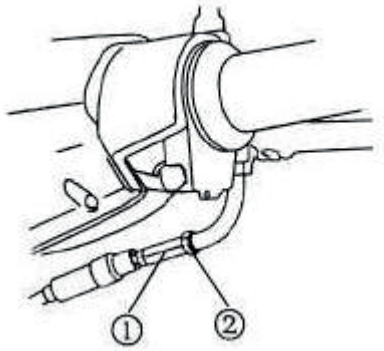
Throttle controller

1. Check throttle controller work condition at two limit position to see whether it works well, make sure that no breakage or deformation occurred at connecting position of throttle controller；

2. Check and adjust the free play of the throttle controller，adjusting standard：3mm~6mm；

3. Adjustment：Pull the rubber cover down to expose the adjusting thread tube and locking nut；

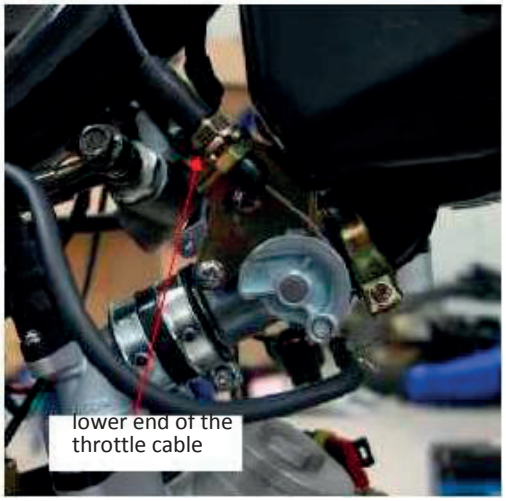
4. Loosen locking nut and turn out some distance，then turn adjusting thread tube to make throttle controller turn freely and opening is proper, tighten the licking nut and push rubber cover up.



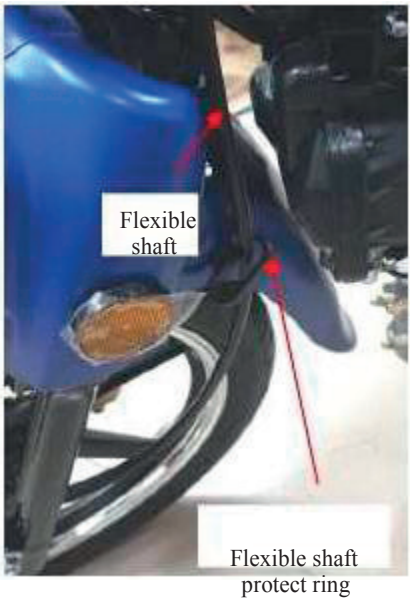
①Adjusting thread tube ②Locking nut

---

1. The installation of the lower end of the throttle cable is shown in right picture. The lower end of the cable is threaded rod, and the position of the supporting bracket can be adjusted relative to the mounting bracket. The wire core of the cable is tight and the threaded pipe is inward. The thread core is loose and the threaded pipe is loaded backward.
2. After installation, tighten the two nuts separately with a wrench.



The flexible shaft enters into the flexible shaft protect ring.



Driving chain

Be careful

* Never check or adjust the drive chain when the engine is working. If the chain becomes very dirty, the Chain should be cleaned before lubrication.

Chaincase

Remove the drive chain box（Page 12-8 ）

Rinse the chain with flame retardant solvent and dry the chain with a cloth.

Check whether the chain is worn or damaged.

If the chain is too worn or damaged, please replace it.

Use the gear oil of SAE 90 to lubricate the chain link.

Check that the chain gear is excessively worn or damaged, and if necessary, replace the sprockets.

Note

* Do not put new chains or new sprockets on an old chain wheel, with an old chain. Whether it is a chain or a chain wheel, it must be in good condition. Otherwise, the new chain or sprocket will wear out very quickly.

Assemble the unloaded pieces in reverse order of disassembly.

Shut down the engine and rest it on its main stand with gear in neutral position.

Measure the relaxation of the chain by moving the chain up and down with your hands.

Drive chain free play (free length)：20-30mm

Adjustment

Loosen the nut of rear axle，youmust turn the adjusting nut of the chain two sides together to adjust the tension of the chain. You must ensure that the end of the left and the right chain adjuster must be in line with marks on rear fork.

Tighten the nut of rear axle to regulation torque value.

Torque value： Axle nut 45-65N·m

Tighten the adjustment nut; check the tension of the chain again and whether the wheel moving freely or not.

Nuts, Bolts, Fasteners

Tighten the bolts, nuts, and fasteners (3-3 pages)
according to the time intervals shown
in the maintenance schedule.

Check all chassis nuts and bolts are tightened

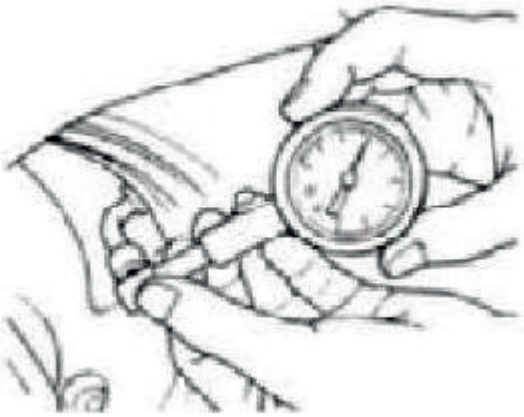
to the specified torque value (1-6 pages).

Check all splitpin, saf snap ring is not lost.

Wheel / tyre

Check for any cuts, pins, or other damage on the tyre,

Check and adjust tyre pressure.

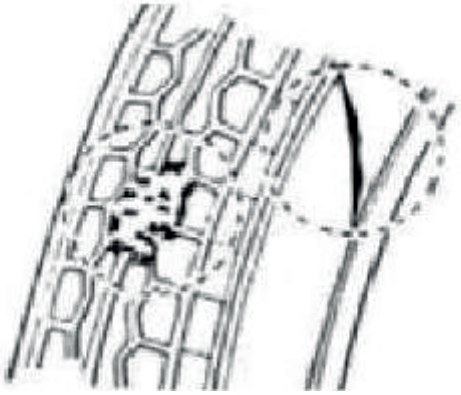


Note

* The tire pressure should be checked when it is in cold state.

Recommended tyre pressure

Cold tyre pressure	Front tyre	Rear tyre
Kg/cm² One people	2.0	2.0

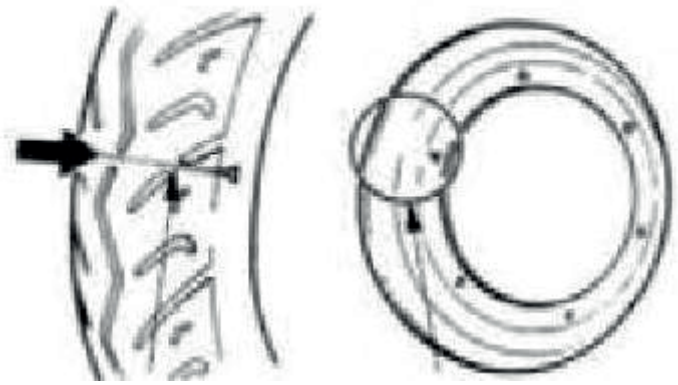


Two people	2.25	2.25

Check the tread depth at the tyre center.
Tire wears to its limits mark; it indicates the tire must be replaced.

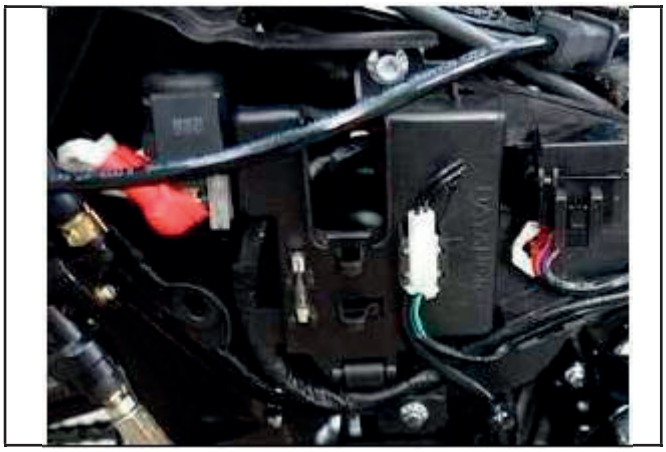
Minimum tread depth Front：1.5mm
Rear：2.0mm

Check the rim is damaged or not.



Battery

Open the inner box lid.
Loosen bolt & remove the battery cover.



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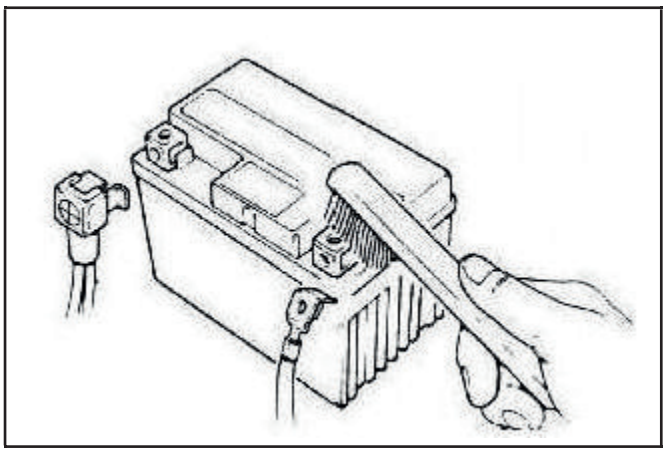
Battery cable remove：

1. Disconnect the cable negative terminal (-),
2. then the cable positive terminal (+),
3. Remove the battery from the motorcycle.

If there is some rust on battery posts, clean it with steel brush.
Install the battery in the reverse procedures of removal.



Caution

If there is rust on the posts very serious, spray some hot water on the posts. Then, clean it with steel brush so that can remove rust for more easily.
Apply some grease on the posts after rust removed to prevent from rust again.

Nuts, Bolts Tightness

Perform periodical maintenance in accord with the Periodical Maintenance Schedule.
Check if all bolts and nuts on the frame are tightened securely.

Operation instructions

It includes engine oil pump maintenance protection operation.

Specification

0km engine oil added quantity： 900cc

When you change engine oil should add：800cc

Oil specs：summer SG15W-40；winter：SG5W-30（recommend using brand oil）

Oil pump inspection item

Item		Standard (mm)	Limitation (mm)
Oil Pump	Inner and outer rotor clearance	0.15	0.2
	The outer rotor and the body clearance	0.15~0.2	0.25
	The rotor and the cover plate gap	0.04~0.09	0.12

Fastening torque of parts in oil cooling system

overhaul：

Item	Thread Spec (mm)	Company rules torque (N • m)	Standard value (N • m)
Clutch, Oil Filter Screw End Cover Screw	M5	4 ～ 7	5
Primary clutch and oil filter lock nut	M14×1.0	40 ～ 45	42
Drain cover bolt	M6	8 ～ 12	10
Oil pump fastening bolt	M6	8～ 12	10
Oil scale plug	M20×2.5	6 ～ 12	8
Drain bolt	M30×1.5	10 ～ 15	12

The oil quantity is less than the standard addition	Oil is dirty	Oil pressure is lower
Oli leak	Without regular replacement of engine oil	The oil quantity is less than the standard addition
Valve guide is worn	Cylinder head gasket is broken	Oil filter, oil channel is blocked
Piston ring is worn	Piston ring is worn	Oil pump is broken

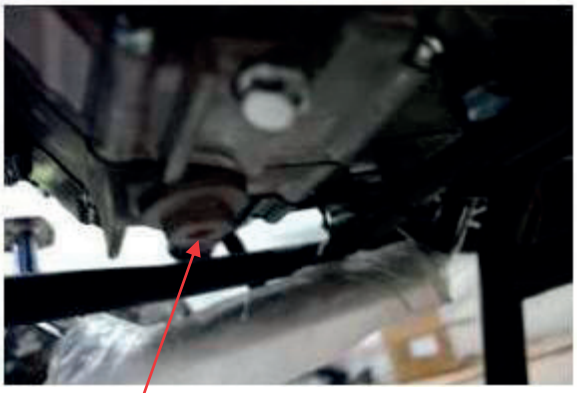
Adding engine oil：

Step 1：turn off the engine, park the vehicle on a flat road and support the main support，stay 8 minutes;
Step 2：use the oil scale plug to check the oil mass (check not to press the oil scale plug into the engine)

Step 3：if the oil is below the standard value, insert the recommended oil into the engine till the upper limitation

When you change the engine oil

！Note: after the engine heating 5 to 10 minutes, turn off the engine, place the vehicle in accordance with *Adding engine oil* step 1, dry the oil, so as to ensure that the oil can be put off smoothly !



Oil drain plug

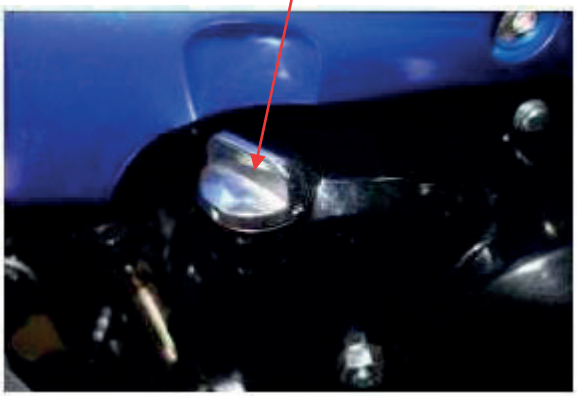
Step1：Put one oil container under the vehicle, take down oil drain plug；

Step2：Drain out the oil and confirm drain bolt washer whether use again, and then tighten drain bolt, tighten torque is 10~15N.m；

Step 3:Add recommended type oil (SG15W-40), and add to standard level，tighten oil scale plug start the engine, run idle for several minutes；

Step 4：Shut the engine down，check the oil scale again, and confirm if add to standard level or not.

Oil scale plug



Oil screen clean

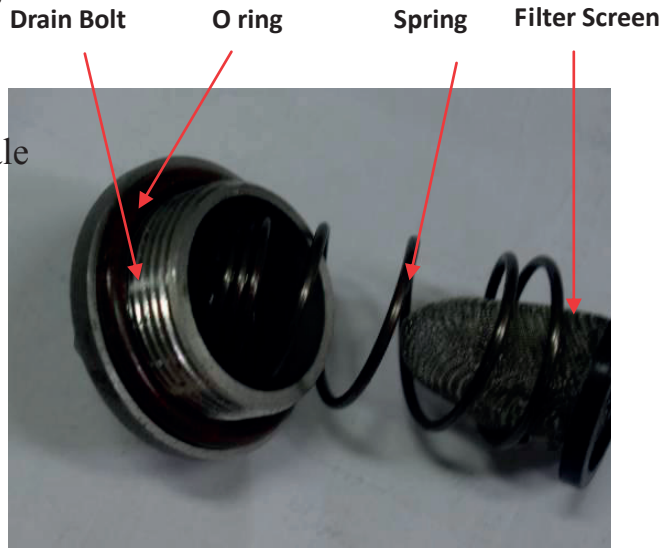
Step 1：Drain oil；

Step 2：Take down filter element and spring；

Step 3：Clean up filter element；

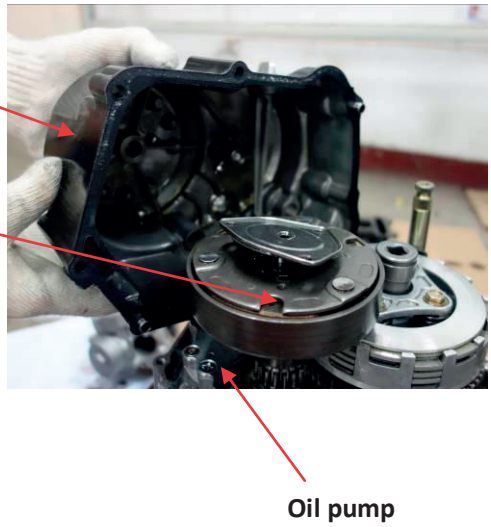
Step 4：Check O-ring can use again or not；

Step 5：Mounting filter element, spring and drain bolt, fasten torque 10~15N.m.



Oil pump replacement

Step 1：Take down right crankcase cover fixed bolt and right crankcase cover；



Step 2：Take down oil filter screw and cover plate.

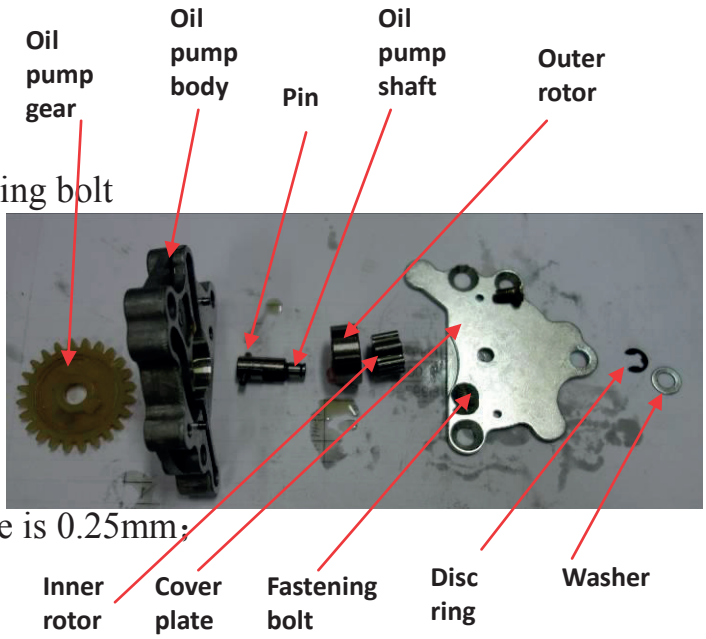
Take down Primary clutch and primary clutch fastening bolt；

Step 3：Take down oil pump bolt and oil pump

Oil pump disassembly

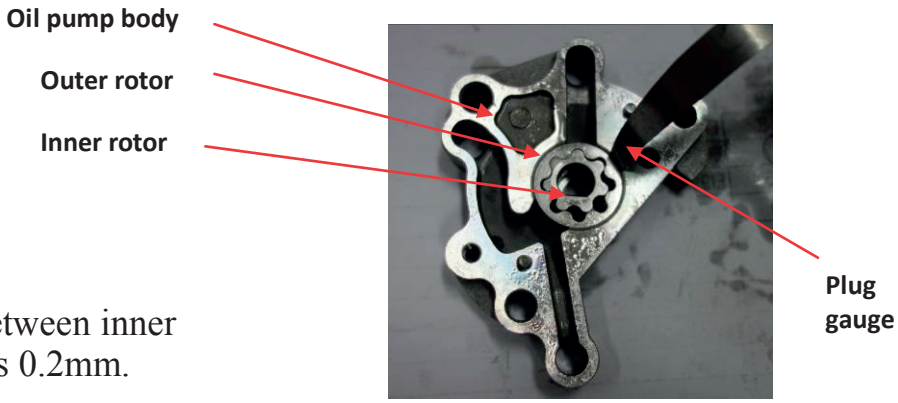
Step 1：Take down the clamp spring of oil pump cover, oil pump gear and shaft；

Step 2：Take down oil pump cover fastening bolt and cover，refer to right photo；

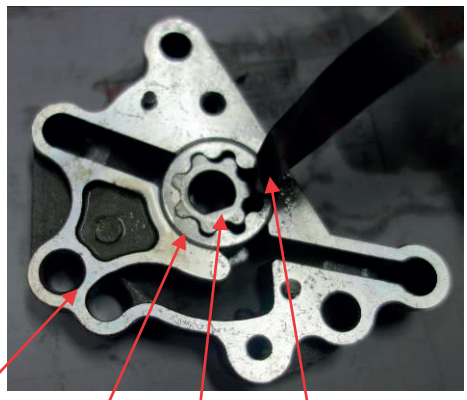


Oil pump examination

Step 1：Check the clearance between oil pump body and outer rotor, limiting value is 0.25mm；



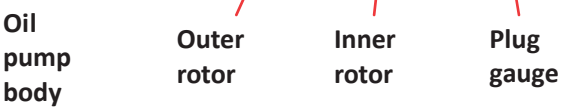
Step 2：Check the clearance between inner and outer rotor, limiting value is 0.2mm.



Step 3：Check the clearance between rotor end face and oil pump body, limiting value is 0.12mm

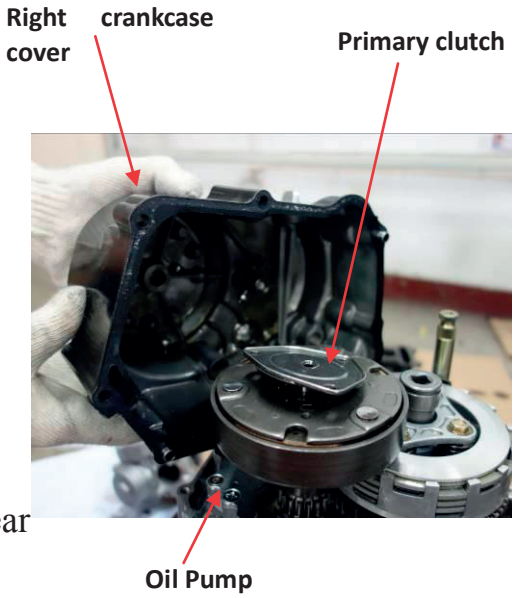
Oil pump body assembly

Step 1：Assembly inner and outer rotor into oil pump body



Step2：Insert oil pump gear, pin and shaft into inner and outer rotor

Step 3：Assembly oil pump cover into oil pump shaft, tightening oil pump cover, fasten torque 8~12N • m，confirm oil pump shaft running freely or not.



Oil pump body assembly

Step 1：Assembly oil pump, and then fastening bolt, fasten torque 8~12N • m，confirm oil pump shaft running flexible.

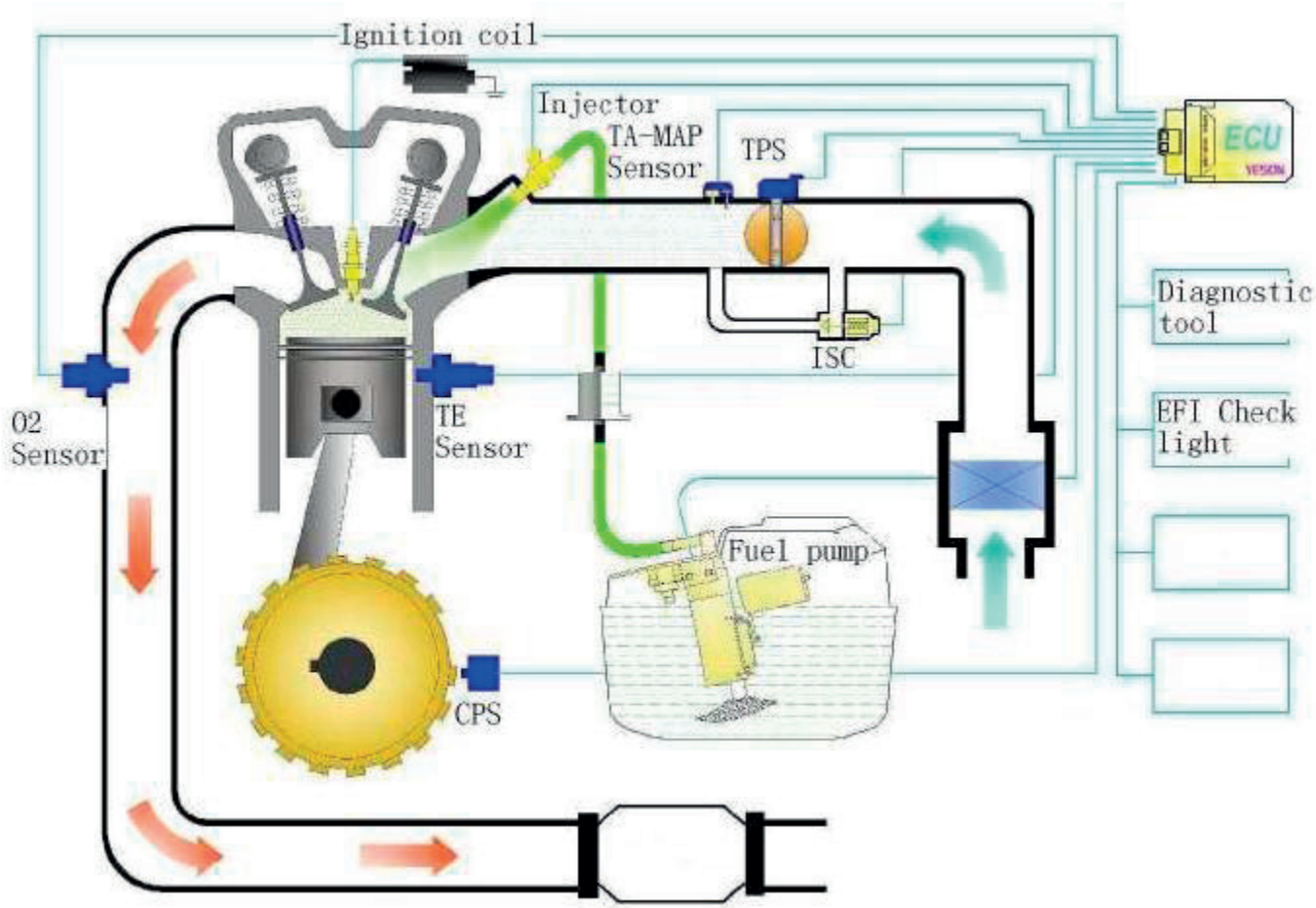
Step 2：Assembly primary clutch, it should match the corresponding line of primary clutch to clutch plate gear and then tighten primary clutch fastening bolt

fasten torque 40~45N • m

Step 3：Assembly right crankcase cover,

tighten fastening bolt，fasten torque 8~12N • m

EFi System Components

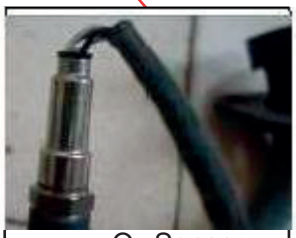


EFi System Vehicle Configuration

TPS
ISC

TA-MAP Sensor

ECU

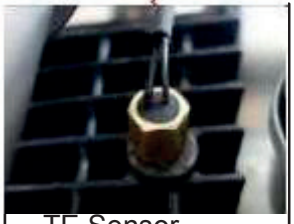


O_2 Sensor

Iniector

EFi Check light

Diagnostic coupler
Test switch

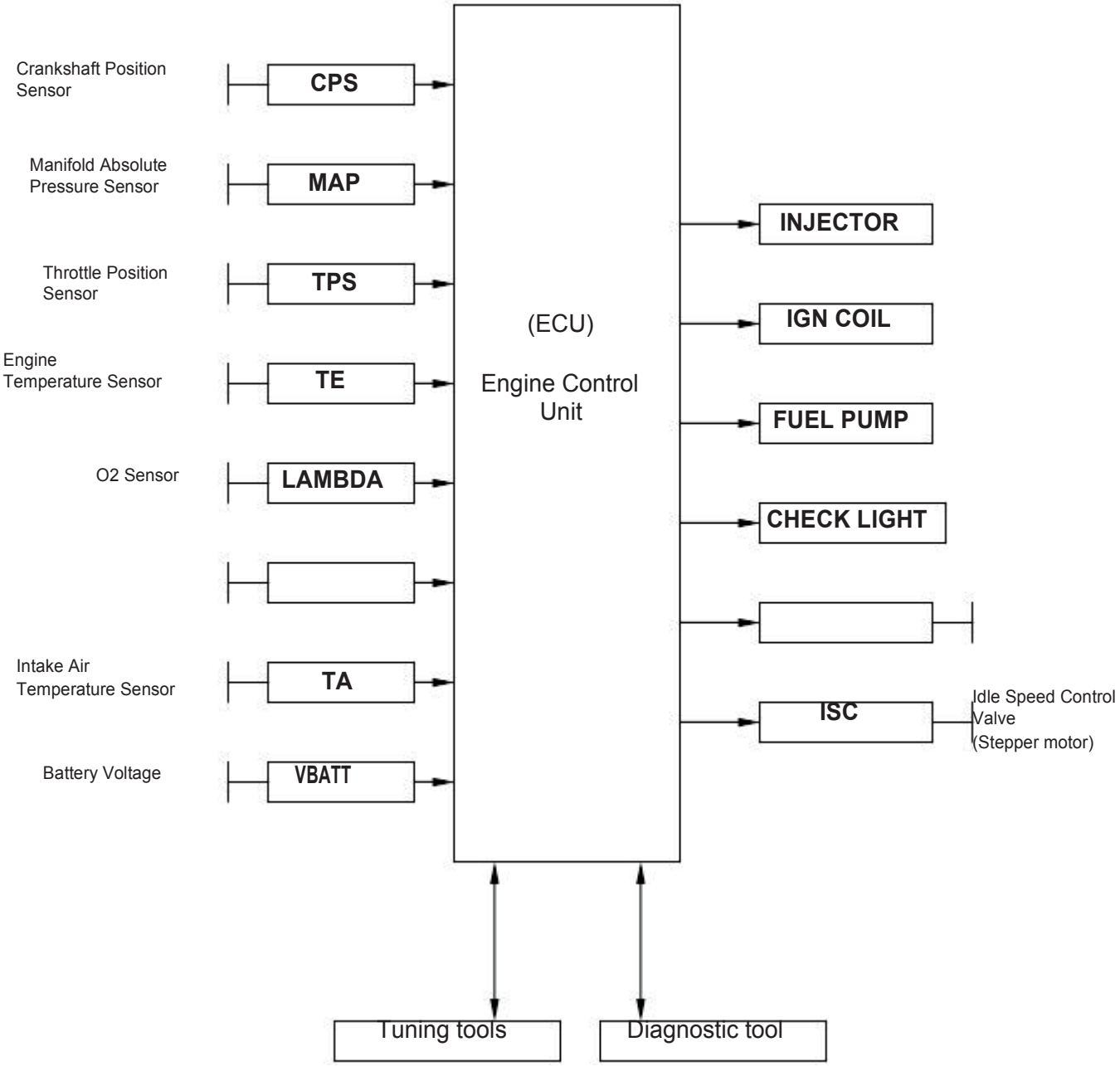


TE Sensor

CPS

Fuel pump

EFi System Operation



4. Fuel Injection System

EFi System Introduction

Based on 4-stroke SOHC engine, displacement 125 c.c. electronically controlled fuel injection, fuel vapor absorbed by activated carbon canister. The engine burns off the blow-by fuel-gas in the crankcase through the fuel-air separating device. The O_2 sensor enhances the efficiency of the catalytic converter, by dynamically controlling the Fuel/Air ratio.

Electronic Fuel Injection Devices

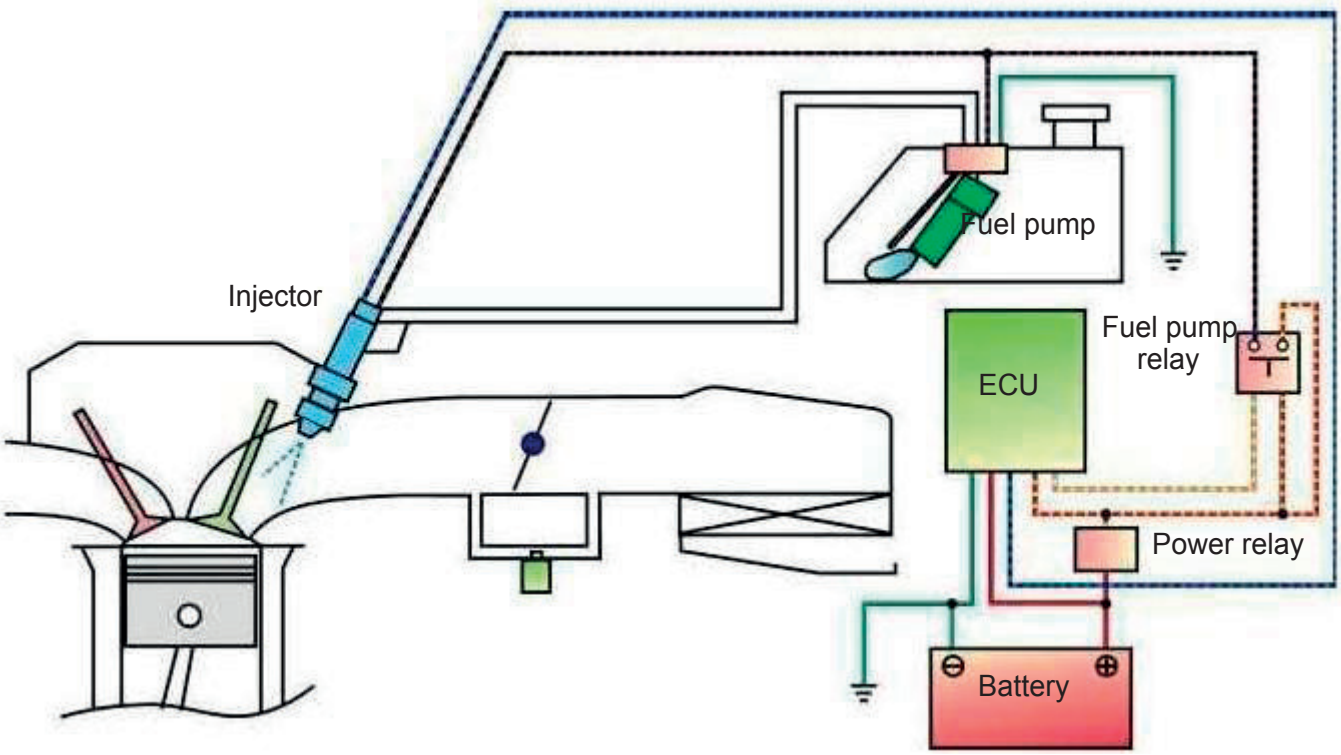
Consist of fuel supply devices: fuel tank, fuel pump, fuel filter and fuel pressure regulator.
And fuel control devices: fuel injector and ECU.
The fuel is pumped from electrical fuel pump in the fuel tank, to the injector on the inlet pipe. The fuel pressure regulator keeps the fuel pressure around 294±6kPa. The signals from ECU enable the injector to spray fuel into the combustion chamber once every two crankshaft revolutions. The excessive fuel flows back to the fuel tank through the fuel pressure regulator. Fuel pump is placed within the tank to reduce the working noise, and the complicity of fuel pipes. Electronically controlled ignition and injection system effectively reduce the fuel consumption rate and pollution.

In the traditional gasoline engine, the carburetor supplies the fuel. The process is done by the engine vacuum and the negative pressure in the carburetor by mixing fuel and air. Under this condition, three major processes are done simultaneously in the carburetor:
1. Air quantity measurement.
2. Fuel quantity determination.
3. Mixing of fuel and air.

Electronic Fuel Injection System distributes the three major processes to three different devices:
1. MAP / TA sensor measures the air quantity and temperature and sends the signal to ECU as a reference.
2. ECU determines the amount of fuel to be injected, according to the default A/F rate.
3. ECU enables the injector to spray appropriate fuel amount. The independence of these three functions will raise the accuracy of the whole process.

EFi engine uses computer-programmed fuel injection, the main features are:
1. The quantity of fuel injected is decided according the condition of the engine. The engine RPM, and throttle position determines the fuel quantity and injection time-length. This throttle-controlled fuel injection is better responding and more accurate.
2. The quantity of fuel injection, and the determination of injection time length, are all controlled by 16-bit microcomputer.
3. The fuel pressure regulator maintains a 294±6 kPa pressure difference between intake pipe and fuel pipe, raising the accuracy of fuel injection.
4. By measuring the air pressure of intake pipe, this system gives the vehicle better accommodation to the environment.
5. Idle air by-pass system supplies fuel and air to stabilize the idle running, and cold starting.
6. O_2 sensor feeds back the signal to minimize the exhaust pollution.

Fuel System



System Description

1. After Key-on, the sensors signal to be sent to the ECU. ECU controls the fuel pump relay to make the fuel pump operate. If the engine is not started, the fuel pump will be shut down within 2 to 3 seconds in order to save electricity.
   Fuel pressure regulator maintains fuel pressure at 294 ± 6kPa (about 3 kg / cm²). According to the operating conditions and environmental compensation coefficient, appropriate fuel will be injected. After Key-off or engine stopped operating, the fuel pump stops running.
2. Fuel impurities filtered by the fuel filter should be cleaned regularly.
3. When the engine can not be started, do not keep start motor running continuously which may lead to lack of battery power (less than 10 V) and the fuel pump will not be able to operate. The correct way is to use a new battery.

Injector

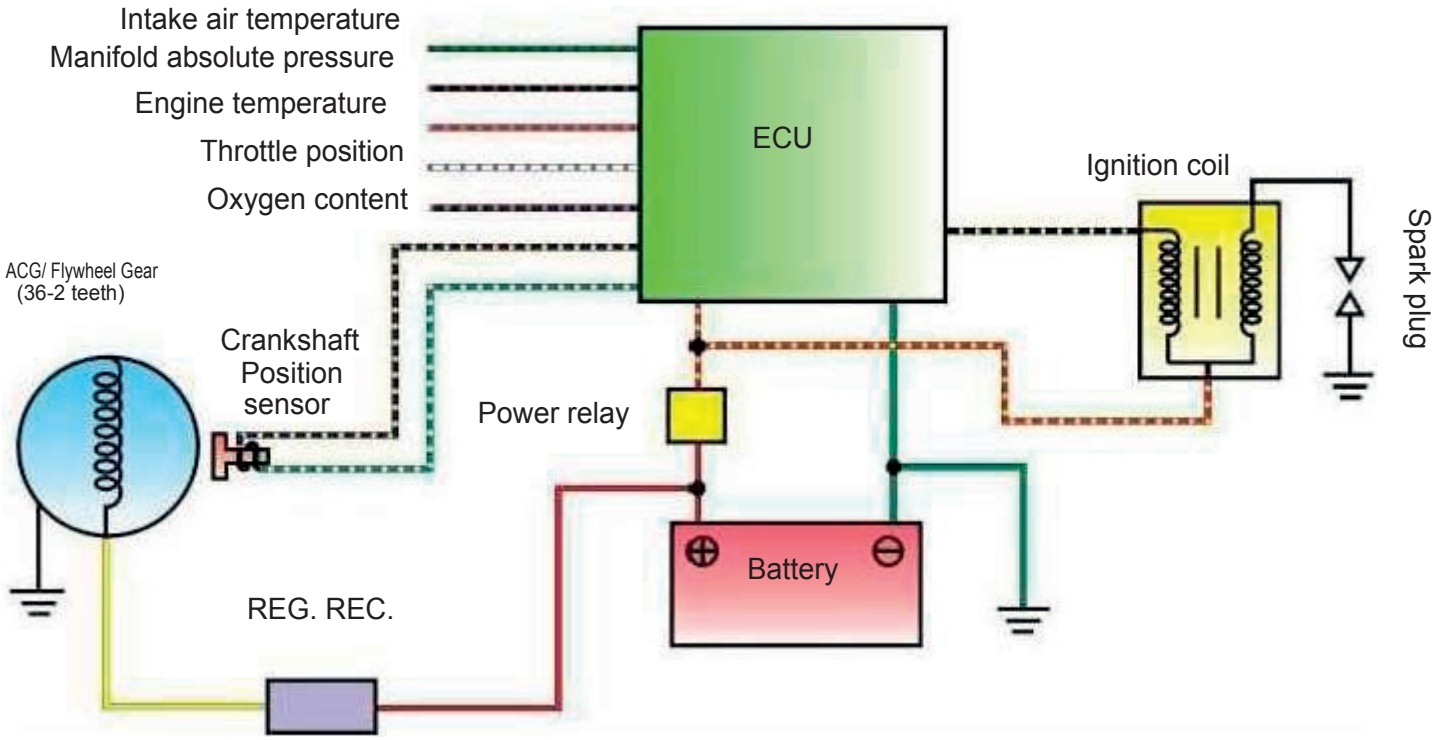
Four-hole type injector provides intake valves fuel injection quantity, enhances the effect of fuel atomization, and reduces HC emissions. Short-type injector cap can easily fix the injector, receive the fuel from the fuel pump, and limit injector rotation sliding. The signals from ECU control the fuel pressure regulator, using the diaphragm and spring to maintain the fuel pressure in 294 ± 6kPa (about 3 kg / cm²), and determine the fuel injection quantity by adjusting injection time width under different engine conditions.

Fuel Pump

Electrical fuel pump is placed inside the fuel tank, powered by the battery and controlled by ECU.
Fuel pressure: 294 ± 6kPa (about 3 kg / cm²)

4. Fuel Injection System

Ignition System



Principle

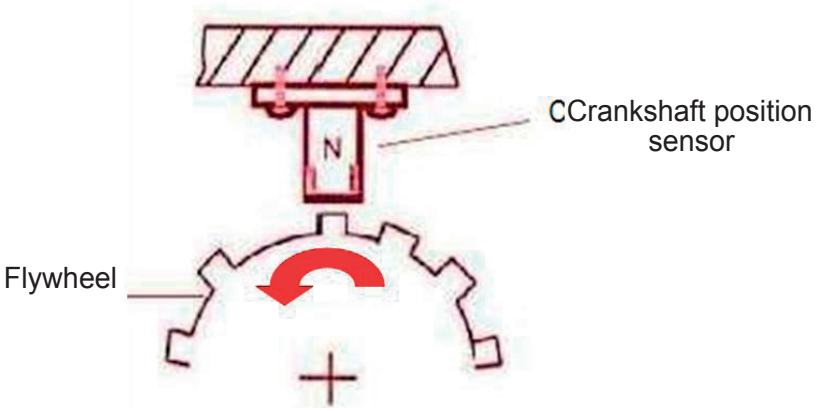
The computer programmed ignition system receives the signals from the Crankshaft position sensor, Throttle position sensor, O_2 Sensor, MAP sensor, Intake air temperature sensor, Engine temperature sensor. Calculating the engine RPM, the 16-bit microcomputer determines the appropriate ignition timing, controls the ignition coil and triggers the spark plug. This way can not only make the engine achieve the maximum power output, but also help improve fuel consumption rate.

Specifications

1. Ignition timing: BTDC 10 °/ 1550RPM
2. Spark plug: TORCH B8RTC Clearance: 0.6 to 0.7 mm
3. ACG crankshaft position sensor coil resistance: 150±15Ω (Green / White - Blue / White)
4. Ignition coil primary circuit resistance: 4.5 ± 20%Ω (20 ° C) (Brown / Green - Black/ Yellow)
5. Battery Type / Capacity: （9D）YB5L-BS/12V 5Ah/（52D）YTX7A-BS/12V 6Ah

Sensors / Drivers

Crankshaft Position Sensor (CPS)

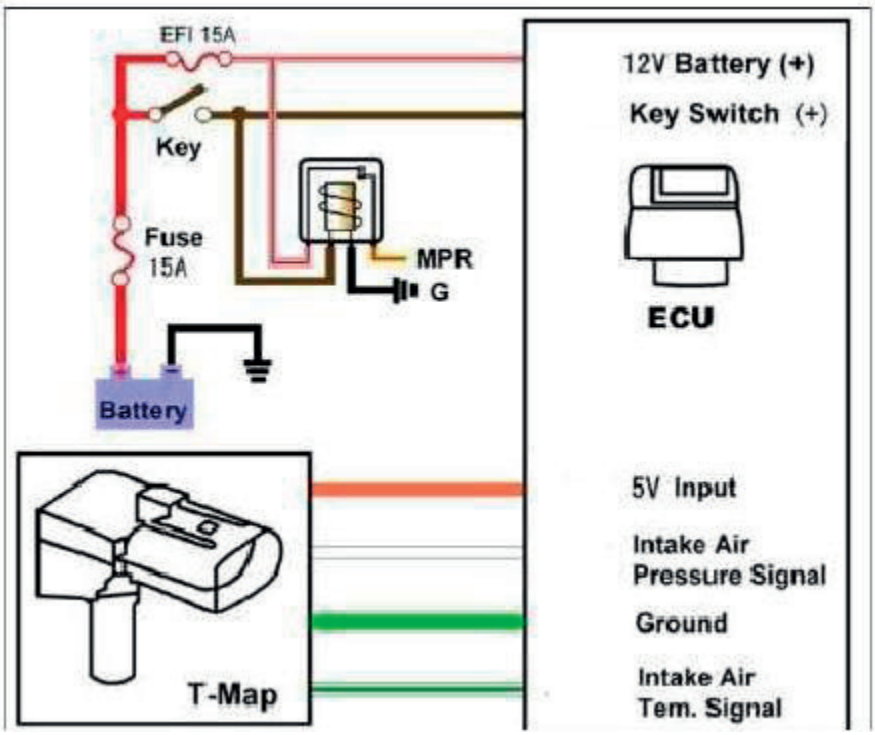


Description

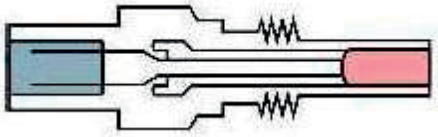
The magnetic field type sensor generates a voltage signal to calculate engine speed with ACG gear ring (36-2 tooth).

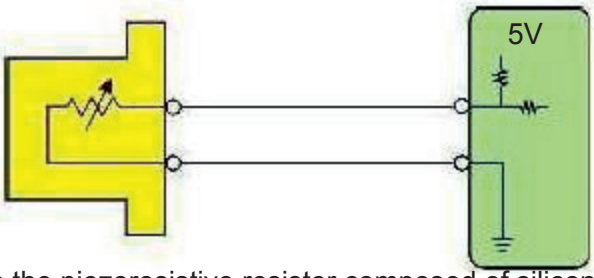
There is one tooth every 10 degree on the gear ring. But, one of the teeth is blank for the TDC calculating base.

Manifold Absolute Pressure (MAP) / Engine Temperature (TE) / Intake Air Temperature (TA) Sensors

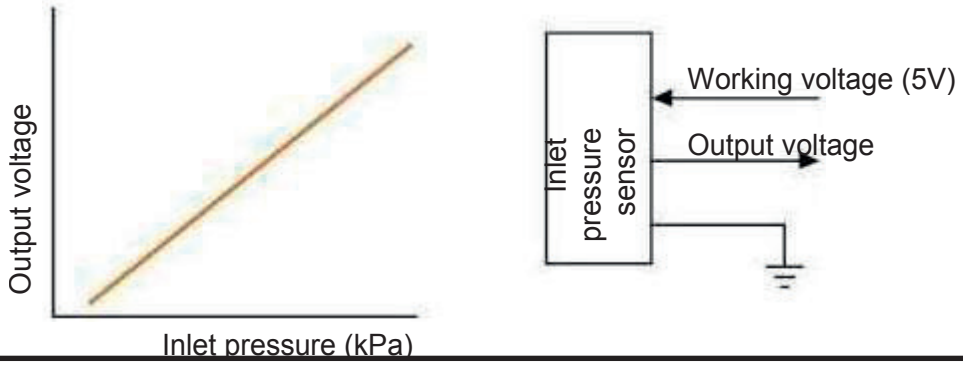


Engine temperature / Intake air temperature sensor:
Use the variable resistor of negative temperature coefficient (thermistor) to sense the outside temperature. The electrical resistance value goes down when the temperature rises. On the contrary, the electrical resistance value becomes higher when the temperature falls. Sensors provide the temperature of the engine and intake air to ECU to determine the injection and ignition timing.

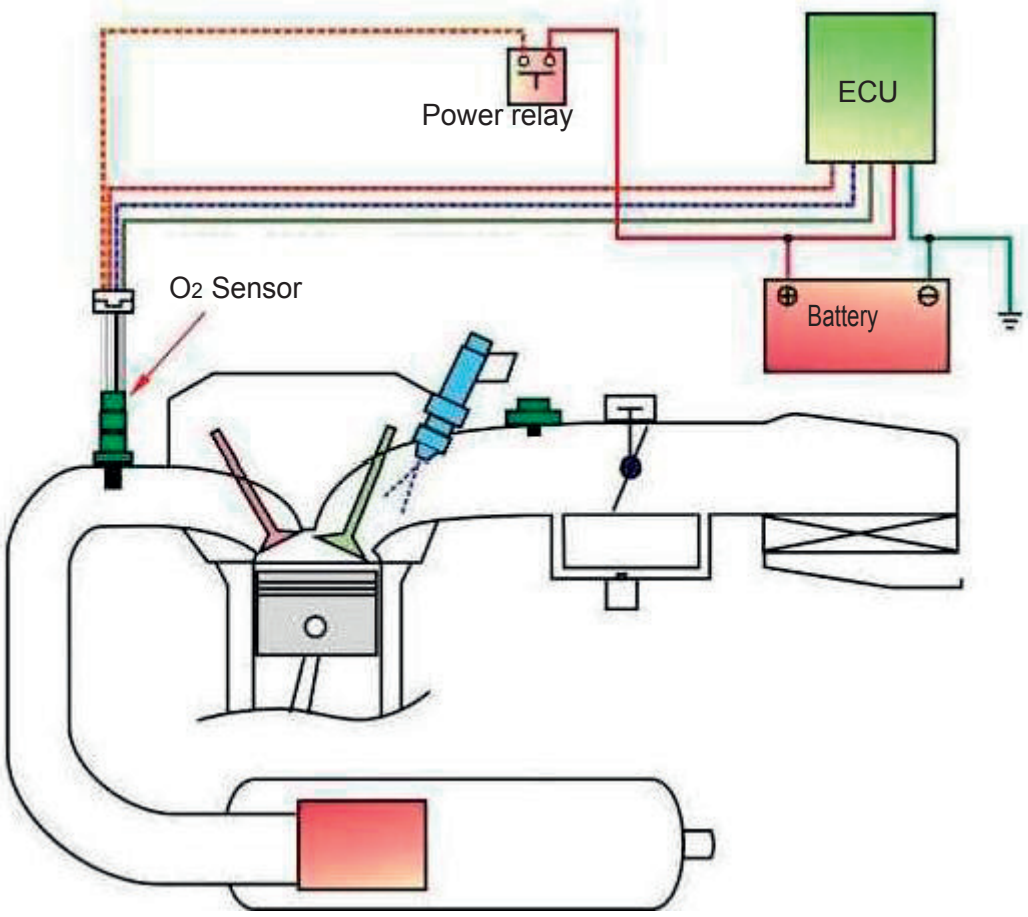


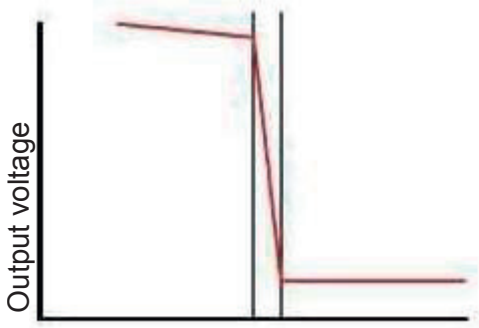


Manifold absolute pressure sensor:
Manifold absolute pressure sensor (MAP Sensor) uses the piezoresistive resistor composed of silicon diaphragm, forming the Wheatstone bridge circuit to measure the atmospheric pressure and the intake manifold pressure, which are both transmitted to ECU for reference of engine control.

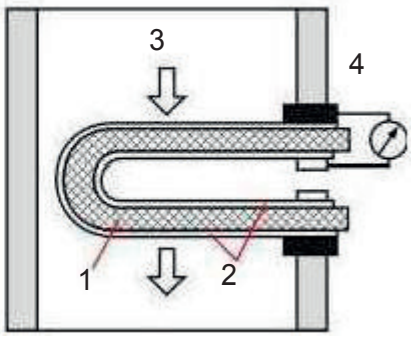


O2 Sensor





Rich ← 14.7 → Lean



1. Ceramics tube
2. 2.Electrode
3. 3.Emissions
4. 4.Atmosphere

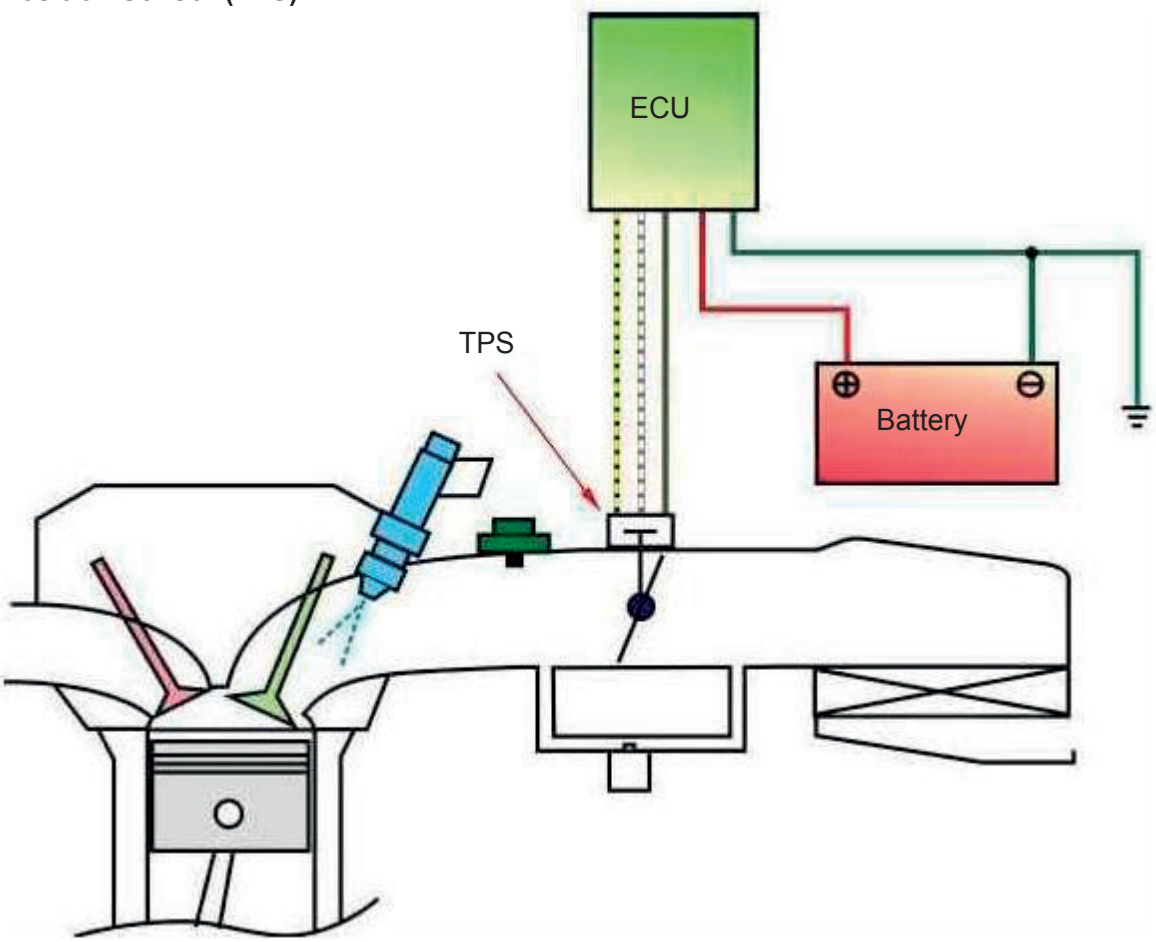
Function

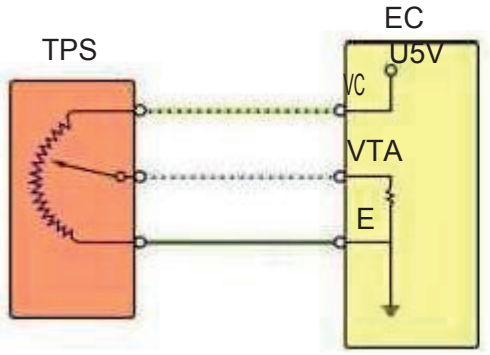
O_2 Sensor measures the proportion of oxygen in the exhaust gas, sending signals to ECU which adjusts the air-fuel ratio by changing the fuel injection time. If the proportion of oxygen is too low, it means the rich air-fuel mixture with higher HC & CO concentration in the exhaust gas. If the proportion of oxygen is too high, it means the lean air-fuel mixture with higher temperature and higher NOx concentration.

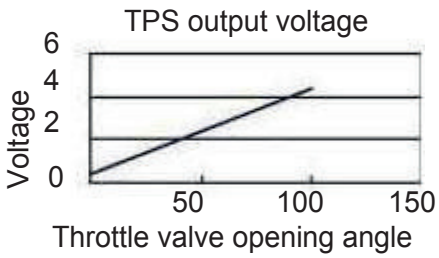
1. O_2 Sensor outputs feedback signal to ECU which keeps the air-fuel mixture near the stoichometric ratio approximately 14.6 and forms the closed loop control system.
2. When the air-fuel mixture is near the stoichometic ratio, CO / HC / NOx are converted most efficiently.
3. O_2 Sensor heater resistance: 6.5 ±1Ω
4. O_2 Sensor amendment in the voltage value: between 100 ~ 900 mV

4. Fuel Injection System

Throttle Position Sensor (TPS)



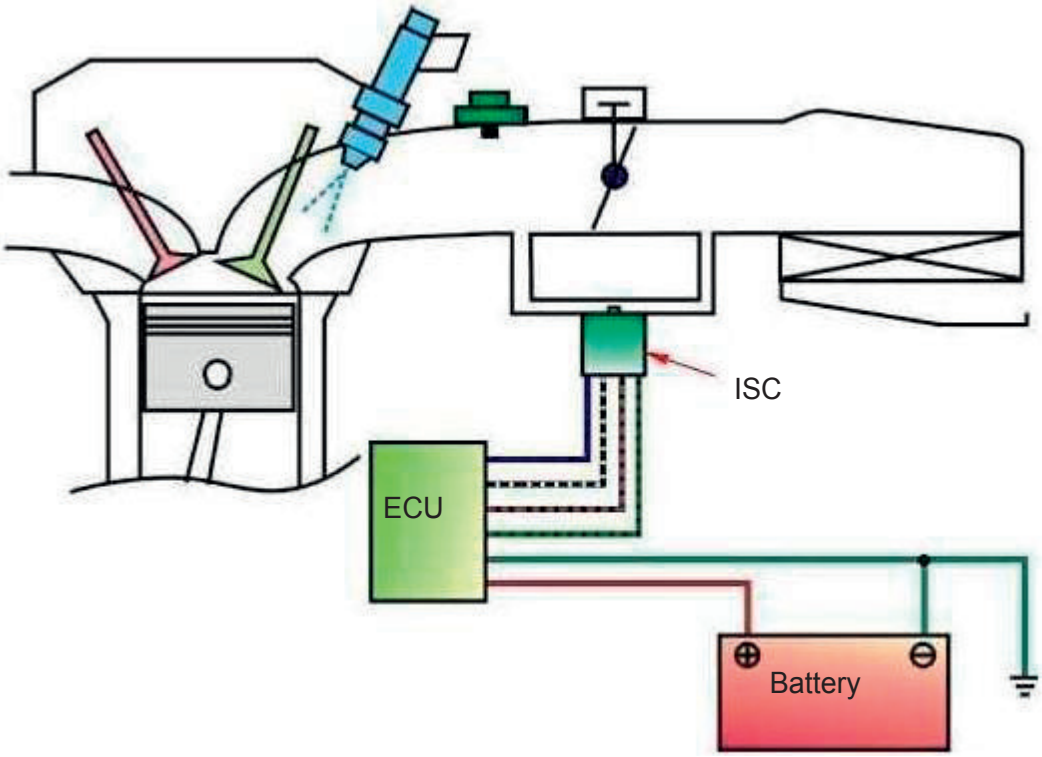


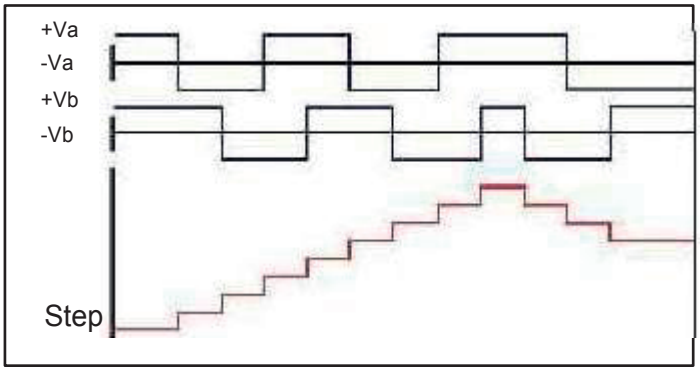


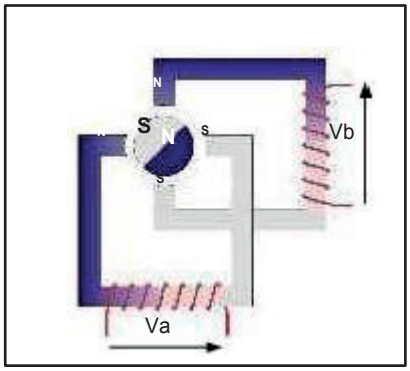
Basic Principle
TPS is a rotary variable electric resistor. When it is rotated, both electric resistance and voltage value change, determining the throttle position.

Function
TPS determines the throttle valve position and sends signal to ECU as reference of engine control.

Idle Speed Control Valve (ISC stepper motor)







Function

ECU controls ISC stepper motor to adjust the bypass intake air quantity and stabilized the idle speed.

Precautions in Operation

General information

Warning

- Gasoline is a low fire point and explosive material. Always work in a well-ventilated place and flame is strictly prohibited when working with gasoline.
- Before dismantling fuel system parts, leak fuel out first, or grip the fuel pipe by using pliers to prevent fuel from splashing.

Cautions

- Do not bend or twist the throttle cable. Damaged cable will lead to unstable driving.
- When disassembling fuel system parts, pay attention to O-ring position, replace with new one as re-assembly.

Specification

Idle	1500±100rpm
Throttle handle free play	2~6mm
Fuel pressure	294±6kPa

Torque value

Engine Temperature sensor	10~14 N • m
O_2 Sensor	12.4~17.4 N • m

Special Tools

Vacuum Gauge
Fuel Pressure Gauge
EFi System Diagnostic Scanner
Fuel Pipe Pliers

EFi System Components Description

ECU (Electronic Control Unit)

Functional Description:

- Powered by DC 9~16V, and has 34-pin socket on the unit.
- The hardware component consists of a 16-bit microcomputer that is its control center. It contains the functional circuit interface of engine condition sensing and the driving actuator for the fuel injector, fuel pump, as well as ignition coil.
- Its major software is a monitor strategy operation program that includes controlling strategy and self-diagnosis programs.

Testing Procedures:

1. Connect the diagnostic scanner to the diagnostic coupler on the vehicle.
2. Key-on but not to start engine, confirm ECU and the diagnostic scanner can be connected or not.
3. Diagnostic scanner will automatically display Version "certification" of the screen.
4. Confirm the application model, version is correct or not.
5. Check if the fault codes exist.
6. Remove the fault codes.
7. Start engine and check the parameters which shown on the diagnostic scanner.

Detection judge:

Fault codes can be read and cleaned, and the fault codes will not appear again after re-start.

Treatment of abnormal phenomena:

1. Disconnected→ First, check whether the cartridge is correct and ECU is normal or not.
2. Unable to start→ ECU or relevant parts abnormal. Re-confirm after the replacement of abnormal parts.
3. Fault codes appear→ ECU or relevant parts abnormal. Troubleshoot and re-confirm.

Throttle Body

Throttle positioning screw

Functional Description:

- Throttle body is the inlet air flow regulating device (similar to the carburetor).
- Throttle valve pivot drives the throttle position sensor synchronously and makes ECU detect the throttle opening immediately.
- Throttle valve positioning screw has been adjusted and marked on the production line. Readjustment is not suggested.

Treatment of abnormal phenomena:

- If all fuel injection associated components identified no adverse, and other traditional engine components are also normal, the engine is still not smooth, please confirm whether the throttle body coke serious.
- If coke serious, please clean throttle body, and then adjust the injection system.

T-MAP Sensor

BR/W DG R/G PL

Functional Description:

Powered by 5V DC from ECU. It has 4-pin sockets on the sensor. One terminal is for power, and 1 terminal are for Intake Air Pressure Signal output.And, the another terminal are for Intake Air Tem. Signal output . The rest one is for ground.

- The major component of the intake pressure sensor is a variable transistor IC. Its reference voltage is DC 5V, and output voltage range is DC 0~5V.
- It is a sensor by sensing pressure, and can measure the absolute pressure in intake process. It also conducts fuel injection quantity correction based on environmental position level.

PIN	Wire color	Function
1	Brown / White	Tem. Signal output
2	Dark Green	Ground
3	Red / Green	MAP. Signal output
4	Purple	5V voltage input

Testing Procedures:

1. Inlet pressure sensor connector to properly (using the probe tool).
2. Open the main switch, but not to start engine.
3. Use "voltage meter" DC stalls (DCV) to check inlet pressure sensor voltage.
4. Confirmed working voltage:
   - Voltage meter negative access to the inlet pressure sensor second pin (Dark Green).
   - Voltage meter positive access to the inlet pressure sensor four pin (Purple).
5. Confirmed plains output voltage values:
   - Voltage meter negative access to the inlet pressure sensor secondly pin (Dark Green).
   - Voltage meter positive access to the inlet pressure sensor third pin (Red / Green)

⚠ Cautions

Attentions to the tools required close to the probe wire waterproof apron penetrate skin and internal terminal before measurements to the correct value.

Detection judge:

- Working voltage value: 5.0±0.1V
- Plains output voltage values: 2.87±0.03V (Conditions: In the plains 101.3 kPa Measurement)

⚠ Cautions

- The higher the altitude, the measurement value to the lower voltage.
- Sea-level atmospheric pressure = 1Atm = 101.3kPa = 760mmHg = 1013mbar

Treatment of abnormal phenomena:

Inlet pressure sensor damaged, or poor contact couplers.
Check whether the abnormal wire harness lines.
Inlet pressure sensor anomaly, the proposed replacement of the sensor to measure the output voltage.
ECU anomaly, the proposed replacement of the ECU to measure the

T-MAP Sensor

Functional Description:

Use ECU DC 5V power supply provided, has the four-pin coupler, a voltage output pin; another one for a grounding pin.

- Its main component is a negative temperature coefficient (resistance temperature rise smaller) thermistor.
- Installed in the air cleaner on the T-MAP sensor within the resistance, with the induction to the temperature change, and converted into voltage signals sent to the ECU then calculated the temperature and, in accordance with the ECU temperature and state amendments injection time and ignition angle.

Testing Procedures:

Resistance Value Measurement:

- Dismantled inlet temperature sensor connector.
- Use of the "Ohmmeter" Ohm stalls, inspection sensor resistance.

Detection judge:

Resistance value and the temperature between relationships as follows

Temperature(℃)	Resistance value (KΩ)
-20	18.8 ± 2.4
40	1.136 ± 0.1
100	0.1553 ± 0.007

Treatment of abnormal phenomena:

Temperature sensor damaged or connector poor contact.
Check whether the abnormal wire harness lines.
Temperature sensor anomaly, the proposed replacement of the temperature sensor.

TPS

Functional Description:

Use ECU provided DC 5V power supply, has the three-pin coupler, one for the power supply pin; one for a voltage output pin; one for a grounding pin.

Its main component is a sophisticated type of variable resistor.

Installed on the throttle body beside the throttle through (the accelerator) rotates, the output of linear voltage signal provided ECU perception and judgment then throttle position (opening), and in this signal with have the most appropriate fuel injection and ignition timing control.

Pins	Wire color	Function
Upper	White/Blue	Signal
Center	Purple	5V voltage input
Under	Dark Green	Ground

Testing Procedures:

1. Sensor connected properly (using the probe tool), or can be removed connector to voltage measurements (direct measurement).
2. Opened the main switch, but do not to start engine.
3. Use "voltage meter" DC stalls (DCV) to check sensor voltage.
4. Confirmed working voltage:
   - Voltage meter negative access to the inlet pressure sensor third pin (Dark Green).
   - Voltage meter positive access to the inlet pressure sensor first pin (White/Blue).
5. Throttle output signal recognition (using the probe tool)
   - Voltage meter negative access to the sensor third pin (Dark Green).
   - Voltage meter positive access to the sensor first pin (white / Blue).
   - Measurements were full throttle at full throttle closed the values of the output voltage.

Cautions

- Attentions to the tools required close to the probe wire waterproof apron penetrate skin and internal terminal before measurements to the correct value.

Detection judge:

- Working voltage value: 5.0±0.1V
- TPS output voltage – throttle fully closed : 0.6±0.02V
- TPS output voltage – throttle fully opened: 3.78±0.26V

4. Fuel Injection System

Throttle output signal measurement

Also, can be used for diagnosis tool confirm to the throttle output signal.

1. Connected to the "diagnosis tool", and open the main switch, but not to start engine.
2. "Diagnosis tool" screen switches to a "data analysis (01 / 03)" screen.
3. Rotations throttle and check voltages.

Treatment of abnormal phenomena:

- Throttle sensor damage or connector poor contact.
  Check whether the abnormal wire harness lines.
- Throttle sensor anomaly, the proposed replacement of the throttle sensor to measure the voltage.

Warning

Throttle sensor prohibited removed from the throttle body to do any testing.

TW Sensor

Functional Description:

- Powered by 5V DC from ECU. It has the two-pin socket on the sensor. One terminal is for power output, and 1 terminal are for ground.
- Its main component is a negative temperature coefficient (resistance temperature rise smaller) thermistor.
- Installed in the cylinder head, the engine temperature sensor resistance, with the induction to the temperature change, and converted into voltage signals sent to the ECU was calculated engine temperature, ECU accordance with the engine warm up to amendment the injection time and ignition angle.

Testing Procedures:

- Dismantled engine temperature sensor.
- Use of the "meter" Ohm stalls, inspection sensor resistance.

Detection judge:

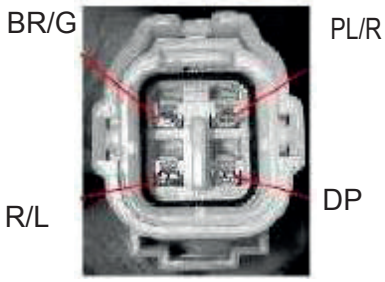
Resistance value and the temperature between relationships as follows:

Temperature(℃)	Resistance value(KΩ)
-10	9.015±0.55
50	0.8089±0.03
120	0.1111±0.0025

Treatment of abnormal phenomena:

- Temperature sensor damaged or couplers to poor contact.
- Check whether the abnormal wire harness lines.
- Temperature sensor anomaly, the proposed replacement of the temperature sensor.

O_2 Sensor



Functional Description:

- Use 8 ~ 16V DC power supply, has the 4-pin coupler, a power supply pins for heater; for a heater control pin; signal for a grounding pin; O_2 for a signal pin.
- O_2 Sensor output feedback signal to the ECU fuel ratio control in the vicinity of 14.5 ~ 14.7, a closed-loop fuel control.
- When the air-fuel ratio control in the near equivalent, CO / HC / Nox to have the highest conversion efficiency.

Testing Procedures:

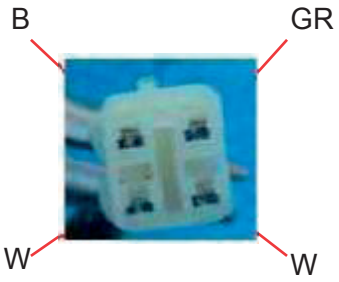
1. Voltage confirmed:

- Removed O_2 Sensor and the wire harness between the coupler.
- Open the main switch, but not to start engine.
- Use "voltage meter" DC stalls (DCV) to check inlet pressure sensor voltage.
- Confirmed working voltage:

  Voltage meter negative access to the wire harness sensor coupler 2nd pin (Red / Blue).

  Voltage meter positive access to the wire harness sensor coupler first pin (Dark Green).

Confirmed working voltage

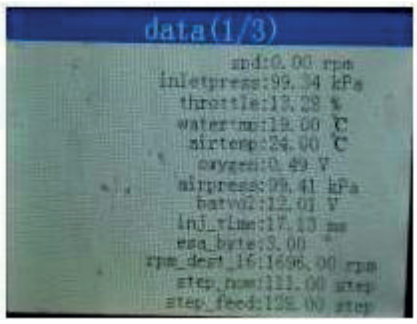


2. Resistance Confirmation:

- Remove O_2 Sensor and the wire harness between the coupler.
- Use of the "meter" Ohm stalls, Measurement O_2 Sensor heater resistance.
- Measurement resistance value

  Ohm meter negative access to the O_2 sensor coupler 2nd pin (White).

  Ohm meter positive access to the O_2 sensor coupler first pin (White).



1. Used the diagnosis tool to confirm of O_2 sensor work situations:

- Connected the "diagnosis tool" to diagnosis coupler and open the main switch to start the engine.
- Engine to be completely warm-up (idling state operation "5 minutes" above).
- Screen will switch to the diagnosis tool of "DATA STREAM 01/01" screen, select " O_2 Sensor" project, and switches to a wave of images, turn the throttle engine speed to about 4500 rpm, Observation O_2 Sensor actuator circumstances.
- Observation O_2 Sensor voltage values that the situation changes.

Detection judge:

- Working voltage value: above 10V
- Resistance value: 6.7~10.5Ω
- O_2 Sensor amendment in the voltage value of between 100 ~ 900 mV beating; representatives pollution closed-loop control system to normal, if contrary to maintain a fixed value for abnormalities.

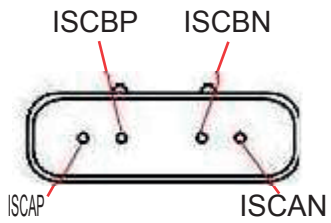
Treatment of abnormal phenomena:

- O_2 sensor damaged, heater damaged or couplers to poor contact.
- Check whether the abnormal wire harness lines.
- O_2 Sensor anomaly, the proposed replacement of the O_2 Sensor，and measurements again.

ISC (stepper motor)：

Functional Description:

- Use ECU provided power, has the four-pin socket.
- 4-pin coupler for the two motor coils of the power supply and grounding wire, grounding ECU power through the control and management of the stepper motor actuators.
- If it's mainly low-power DC motors, drives idle speed control valve (ISC) of the movement to adjust the idle air flow channel size, control of idle speed of the engine in the cold or hot.



ISC PINS

Testing Procedures 1:

Resistance Confirmation:

- Idle Air Control Valve will be demolished down coupler (directly in the body, can also measure).
- Use of the "meter" Ohm stalls （Ω）, measurement of the two step motor coil resistance values.
  A phase: ISCAP and ISCAN
  B phase: ISCBP and ISCBN

Inspection of the actuation (testing can only be on engine, not a single test):

- Closure of the main switch.
- Use hand to touch Idle Air Control Valve body.
- Open the main switch.
- Feeling the Idle Air Control Valve Actuation.

Cautions

- Dynamic checking for Idle Air Control valve, can only be tested on the engine, not a single test.

A phase measurement of the resistance value

Detection judge:

1. Resistance value:
   A phase: 80 ± 10Ω (Environmental conditions: 15 ~ 25 ℃)
   B phase: 80 ± 10Ω (Environmental conditions: 15 ~ 25 ℃)
2. Actuator inspection:
   In the above steps Idle Air Control Valve (ISC) Idling motor actuator control of inspection, ISC will be slightly vibration or "… da… da…" continuous sound.

B phase measurement of the resistance value

Treatment of abnormal phenomena:

- Idle air control valve damage, or poor coupler contact.
- Check whether the abnormal wire harness lines.
- Idle Air Control Valve anomaly, the proposed replacement of the Idle Air Control Valve, further inspection of its actuator.

4. Fuel Injection System

Fuel Pump

Functional Description:

Powered by DC 8~16V, and has four-pin socket on the pump.
The two terminals are connected to power source and ground respective. The ECU is to control and manage the operation of fuel pump through electrical power.
Its major component is a driving fan pump that equipped with a low electrical consuming DC motor. Powered by 12V voltage and keep fuel pressure inside the fuel pump in 294±6kpa (about 3 kg / cm_2).
The fuel pump is located inside of the fuel tank, and installed a filter in front of its inlet so that can prevent from foreign materials sucking into the fuel pump to damage it and the fuel injector.

Testing Procedures 1:

Fuel pump working voltage confirmed:

- Fuel pump coupler to properly (using the probe tool), or can be removed coupler working voltage measurements (direct measurement).
- Open the main switch, but not to start engine.
- Use "voltage meter" DC stalls (DCV) to check fuel pump voltage.
- Confirmed working voltage:
  Voltage meter negative access to the wire harness fuel pump coupler 2nd pin (White/Red).
  Voltage meter positive access to the wire harness fuel pump coupler first pin (Brown / Green).

Confirmed working voltage

Cautions

- Conducting fuel pump voltage measurement, if the main switch to open three seconds after the engine did not started, the ECU will automatically cut off the fuel pump power supply.

Detection judge 1:

1. Working voltage value: Above 10V
2. Resistance value: 1.5±0.5Ω
3. Fuel pressure: 294±6kPa (about 3kg/cm_2)

Testing Procedures 3:

Fuel pressure measurement:

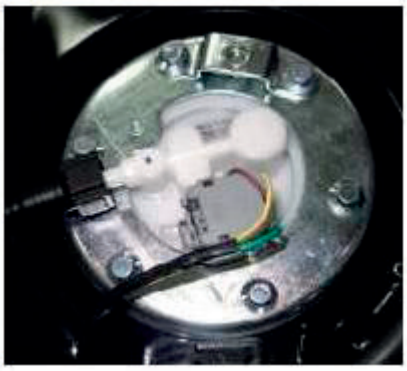
- Use fuel pressure gauge, connected in series between the injector and the fuel tank.

Cautions

- In the implementation of the fuel pressure measurement, will go to the demolition of the fuel hose, such as: injector or fuel pump hose, hydraulic measurements after, be sure to confirm whether there is a leakage of fuel situation in order to avoid danger.

Fuel system pressure measurement

Fuel pressure measurement demolition - injector



Fuel pressure measurement demolition - fuel pump

Detection judge 3:

1. Fuel pressure: 294±6kPa (about 3kg/cm_2)

Treatment of abnormal phenomena:

1. Fuel pump damages internal coil break, or coupler bad contact.
2. Fuel filter blockage.
3. Fuel pump anomaly, the proposed replacement of the fuel pump.
4. Fuel unit anomaly, the proposed replacement of the fuel unit.

4. Fuel Injection System

Fuel Injector

Functional Description:

- Powered by DC 8~16V, and has two-pin socket on the injector.
- Its major component is the solenoid valve of high resistance driven by electronic current.
- The two terminals are connected to power source and ground respective. It is controlled by ECU to decide the injection timing, and the injector pulse width.

Injector resistance confirmation

Testing Procedures:

1. Resistance Confirmation:
   Use of the "meter" Ohm stalls (Ω), measurement of the injector resistance value.

2. Injector injection state examination:
   - Removed the injector fixed bolt and removed the injector from intake manifold, but not removal of harness coupler.
   - Injector and injector cap tightly by hands, fuel spills should not be the case.
   - Key-on and start the engine, injector injection state examination.

Detection judge:

1. Between the two pin resistance values: 12±0.6Ω
2. injection state:
   - Fuel atomizing good, with a clear scattering angle → judged as normal.
   - Injection-state such as water, no obvious scattering angle → found abnormal.

Injection-state atomizing good

Treatment of abnormal phenomena:

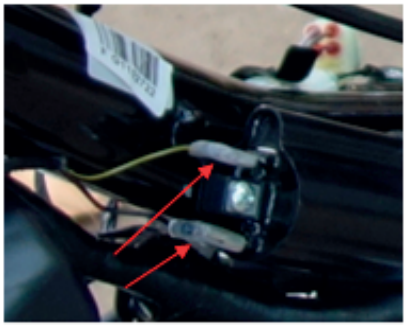
1. Injector abnormal, the proposed replacement of the new one injector.
2. Injection-state abnormal, for the following reasons:
   - Injector obstructive→ the proposed replacement of the new one injector.
   - Fuel pressure shortage → confirmed hydraulic pressure, the proposed replacement fuel pump to confirm.

Injection-state unusual

Warning

- Gasoline is lower ignited explosive materials, in the ventilation premises operations, and prohibited fire.
- In the inspection injector fuel injection state, the outflow of gasoline, and the application of appropriate collection containers, so as to avoid danger.

Transistor ignition coil



First circuit coil resistance measurement

Functional Description:

- Use 8 ~ 16V DC power supply, has the two-pin socket.
- Two-pin socket for the power supply and connect one pin of the ECU. Its main components for the high conversion ratio transformer.
- Through computer programs when the ignition is controlled, from ignition timing (TDC) / crank position sensor, the throttle valve position sensor, engine temperature sensor, the inlet pressure sensor and O_2 Sensor, issued by the signal, with the engine Speed through the ECU to determine the appropriate ignition is, by the current of a crystal intermittent control, a 10000-35000 volts of secondary hypertension, flashover triggered spark plug, this approach will not only enable the engine to achieve maximum output function, also help to improve the efficiency of fuel consumption and pollution improvements.

Testing Procedures:

Resistance Confirmation:

- Removed coil first circuit plugs on the ignition coil (Brown / Green & Black / Yellow).
- Use of the "meter" Ohm stalls (Ω), measurement of the ignition coil resistance value.

Detection judge:

- Ignition coil primary circuit: 4.5Ω±20% (20°C)

Treatment of abnormal phenomena:

1. Ignition coil internal coil disconnection damaged, or plugs bad contact.
2. Ignition coil ignition is not abnormal, proposes to replace the ignition coil.

Crankshaft position sensor

Measurement resistance value

Functional Description:

- Do not need for an external power supply, has two-pin of signal plug.
- Constitutes a major change in its reluctance induction coil.
- The spacing of flywheel and sensor should be 0.6 ~0.8 mm.
- Magnetic induction sensor is the use of flywheel on the Gear (36-2 tooth) rotary cutting induction coil changes in the magnetic field sensor with the inductive voltage signal for ECU judgment, calculated at the engine speed and crankshaft position, and with a most appropriate time of fuel injection and ignition control.

Testing Procedures:

Resistance Confirmation:

- Removed crank shaft position sensor coupler (Blue / White & Green / White).
- Use of the "meter" Ohm stalls (Ω), measurement of the crankshaft position sensor resistance value.

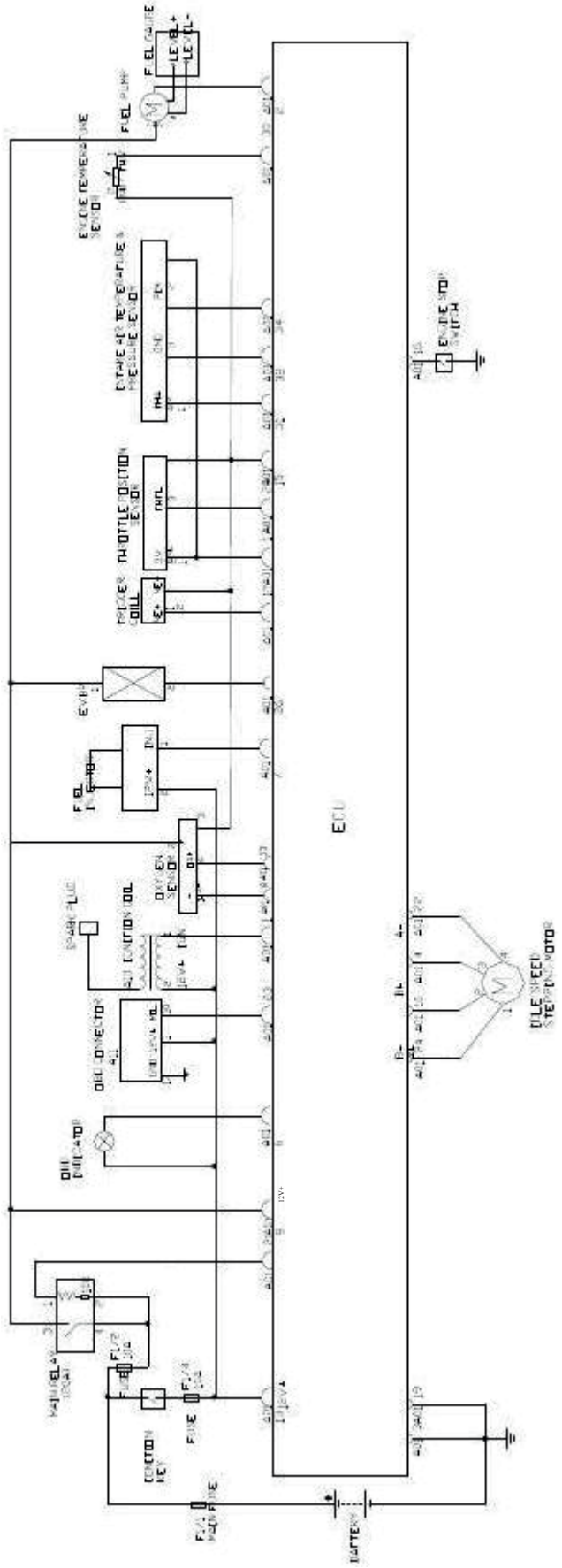
Detection judge:

- Resistance value: 150±15Ω

Treatment of abnormal phenomena:

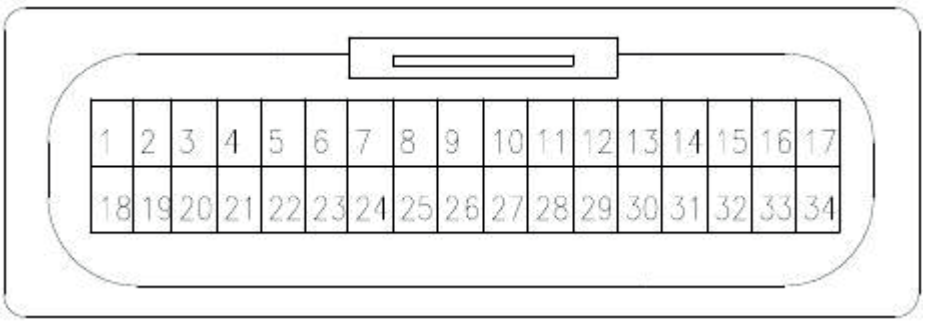
1. Sensor internal coil interrupted damaged, or coupler bad contact.
2. Check whether the abnormal wire harness lines.
3. Sensor coil anomaly, the proposed replacement of the new one.

EFi System Circuit



ECU Pin Configuration

(ON ECU)

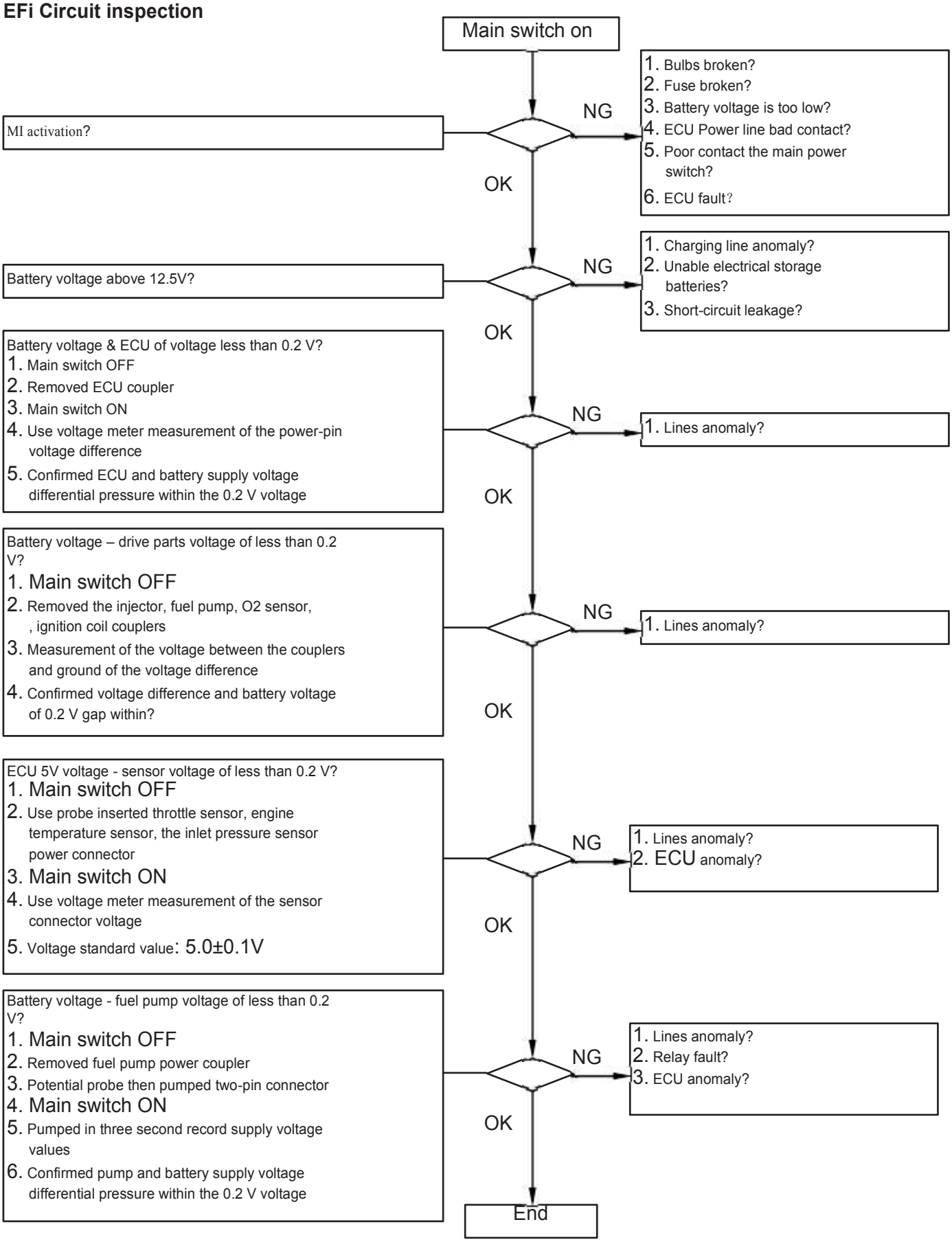


ECU Pin Note

	Pin code	Wire color	Note
1	IGN	B/Y	IGNITION COIL
2	PUMP	W/R	FUEL PUMP RELAY
3	GND	G	POWER GROUND1
4	A-	L/W	IDLE SPEED CONTROL －A
5	-	-	-
6	MIL	Y/BR	MULTI INDICATOR LAMP
7	INJ	B/R	INJECTOR
8	OSH	PL/R	O2 SENSOR HEATER
9	VBR	BR/G	MAIN RELAY OUTPUT (+12V)
10	B+	GR/W	IDLE SPEED CONTROL ＋B
11	-	-	-
12	NE+	L/Y	CRANK PULSE SENSOR
13	VBC	B	IGNITION KEY (+12V)
14	-	-	-
15	S-G2	DG	SENSOR GROUND
16	-	-	-
17	VREF	PL	SENSOR POWER OUTPUT (+5V)
18	N-G	LG/R	NEUTRAL POSITION
19	GND	G	POWER GROUND2
20	-	-	-
21	MSW	Y/B	MAIN RELAY CONTROL
22	A+	W/BR	IDLE SPEED CONTROL ＋A
23	K-LINE	B/G	DIAGNOSTIC TOOL
24	B-	W/G	IDLE SPEED CONTROL －B
25	RPMOUT	B/W	RPM SIGNAL
26	-	-	-
27	-	-	-
28	-	-	-
29	THTL	W/L	THROTTLE POSITION SENSOR
30	THW	Y/G	ENG. TEMP. SENSOR
31	THA	BR/W	AIR TEMP. SENSOR
32	SG1	DG	T-MAP SENSOR GROUND
33	OS+	R/L	O2 SENSOR
34	PIM	R/G	MANIFOLD PRESSURE SENSOR

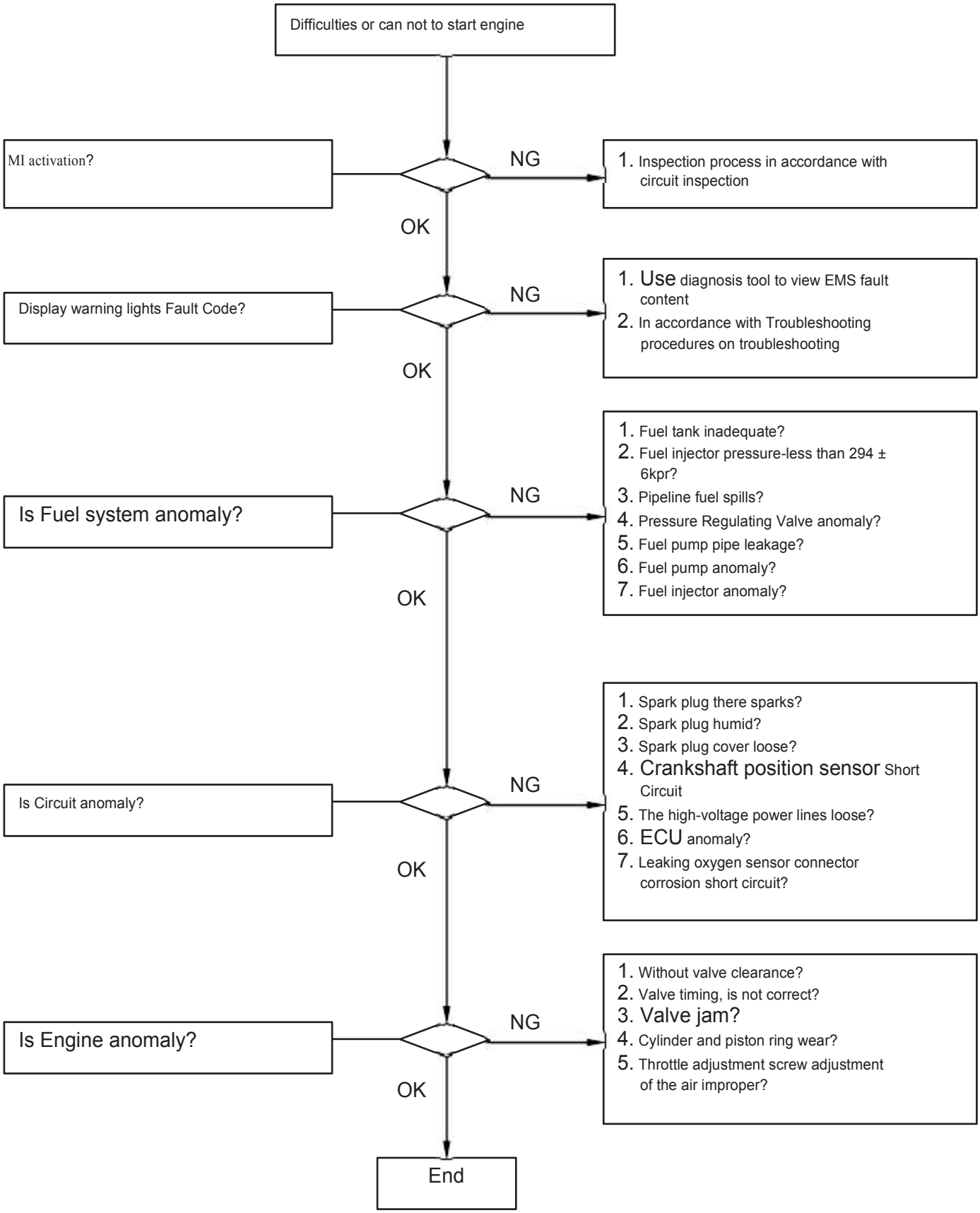
Troubleshooting

EFi Circuit inspection

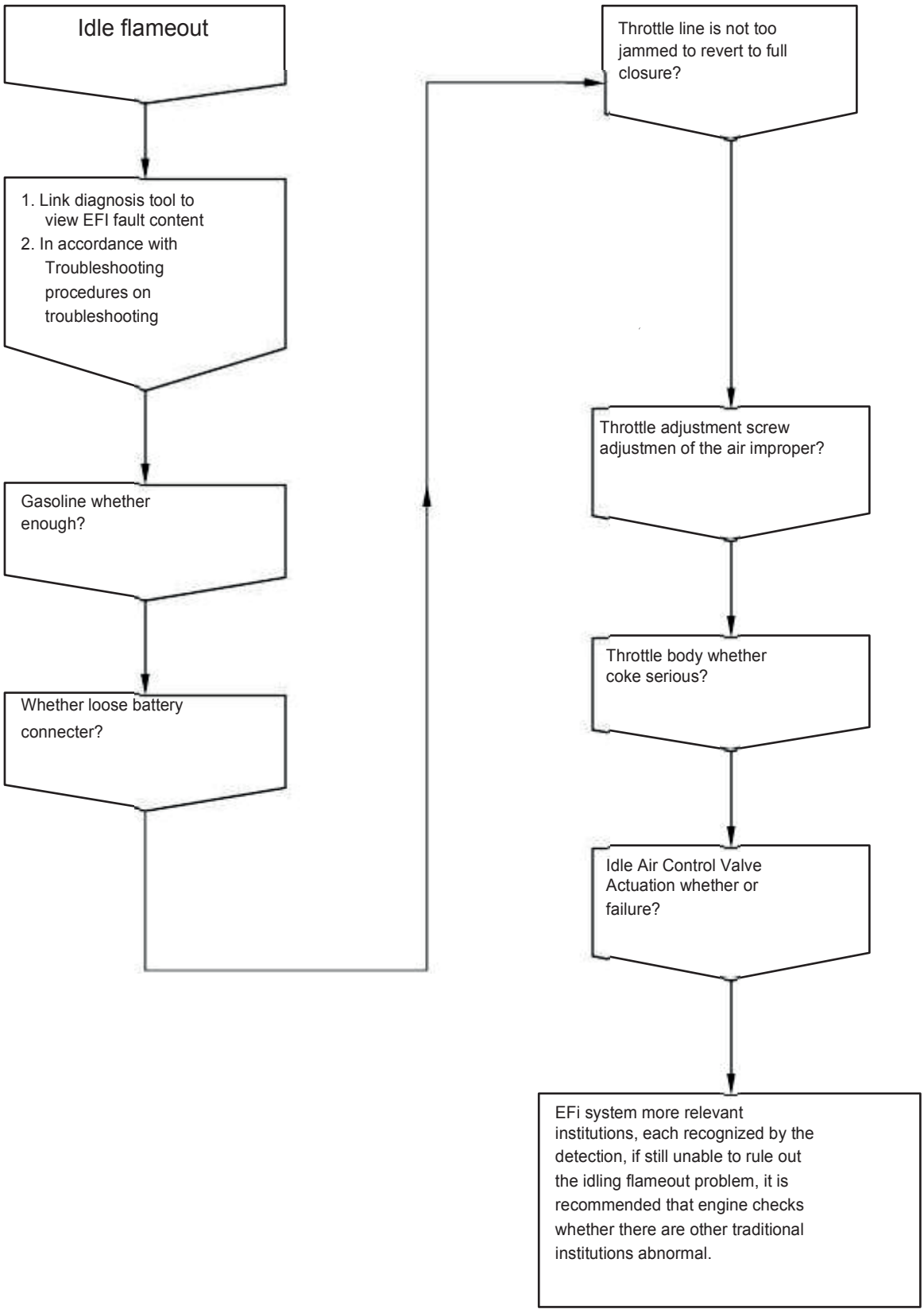


4. Fuel Injection System

Can not Start the engine or difficult to start inspection



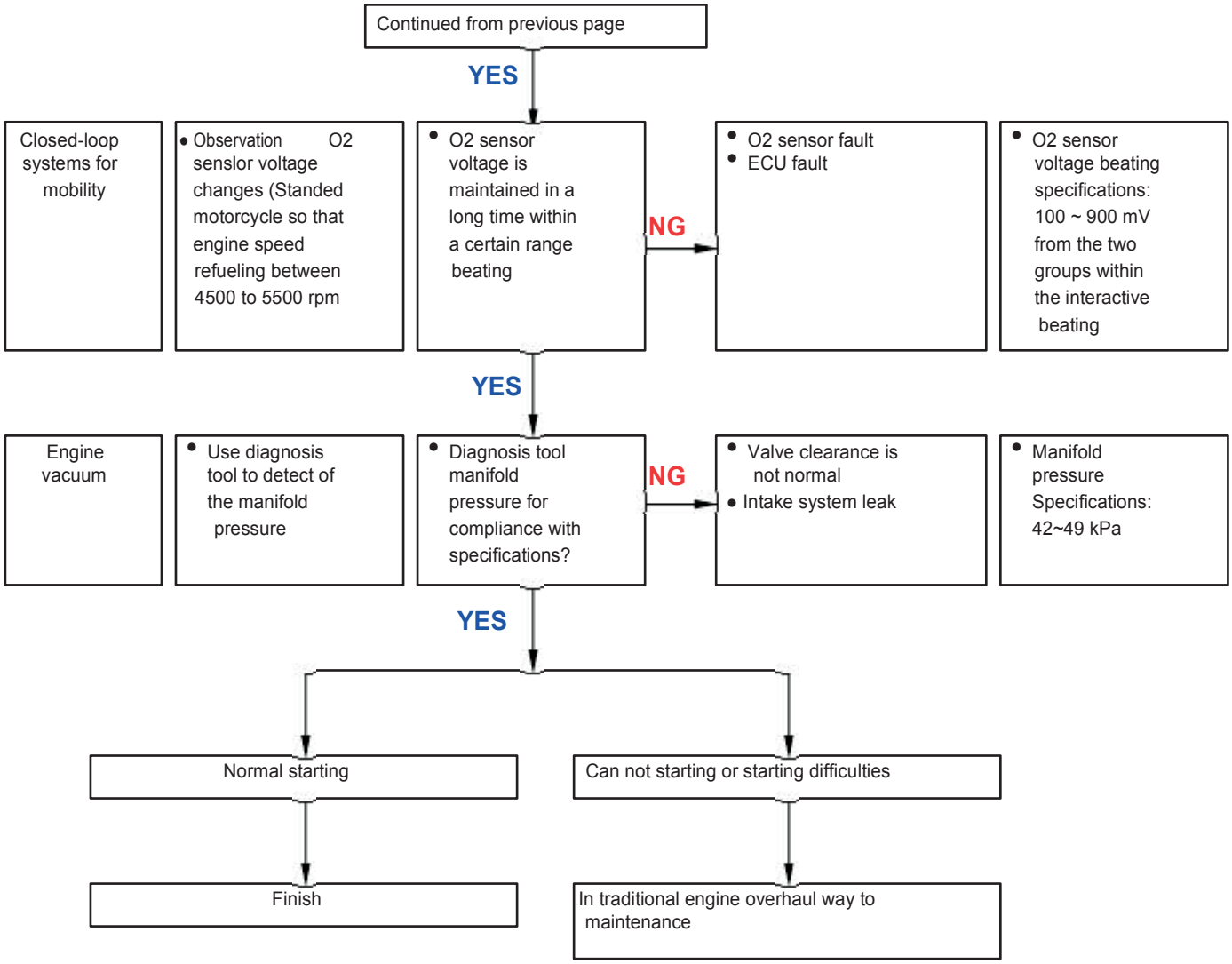
Idle flameout diagnosis



Integrated Troubleshooting Procedure

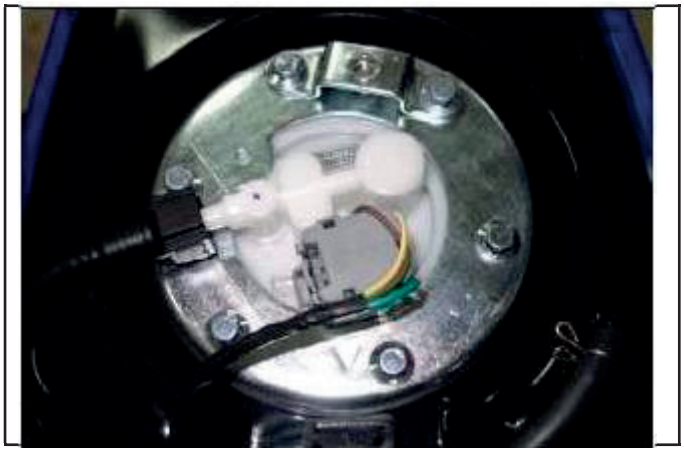
Checking, adjusting Project	Detection of maintenance projects and steps	Fault status determination		Fault reasons	Parts specifications
Battery voltage	• Use meter direct measurement battery voltage • Use diagnosis tool detection battery voltage	• Battery voltage is 10 V above? • Diagnosis tool show whether the voltage of 10 V above?	NO	• Battery electricity • Battery connector loose • Harness circuit opening • ECU coupler not connected properly	• Diagnosis tool display voltage required to achieve more than 10 V
		YES			
Diagnosis fault code inspection	• Use of the diagnosis tool detection fault code • Elimination of fault codes, and then start engine	• Diagnostic tool show whether or not a fault code? • Fault Code cleared after show again?	YES	• TPS fault • ETS fault • CPS fault • MAP fault • O2 sensor fault • • ECU fault	• The sensor detection methods and specifications, please refer to repair manual
		NO			
Fuel quantity and fuel pressure	• Removed the injector on the intake manifold, but not removal of harness coupler. (Injector and injector cap tightly by hands, fuel spills should not be the case) • Start the engine • Examine whether injector fuel injection • Between the tank and injector installation the pressure gauge • check fuel pressure adequacy	• Injector whether injection? • Injector spray angle is normal? • Fuel pressure enough?	NO	• less than fuel tank • Injector fault • Fuel pump relay fault • Fuel pump fault • ECU fault • Fuel pump filter obstructive	• Pressure fuel specifications: Open the main switch three seconds after but not start engine →more than 250 kPa Idle → 294±6kPa • Injector resistance specifications: 12±0.6
		YES			
Ignition situation	• Removed the spark plug from the cylinder head, but then power lines still ring • Start the engine • check spark plug sparks	• Examine whether the spark plug ignition? • Check spark plug sparks strength is normal?	NO	• Spark plug fault ' • ECU fault • Ignition coil fault • Crankshaft position sensor fault	• Spark plug specifications: NGK-CR8E
		YES			

Continued next page

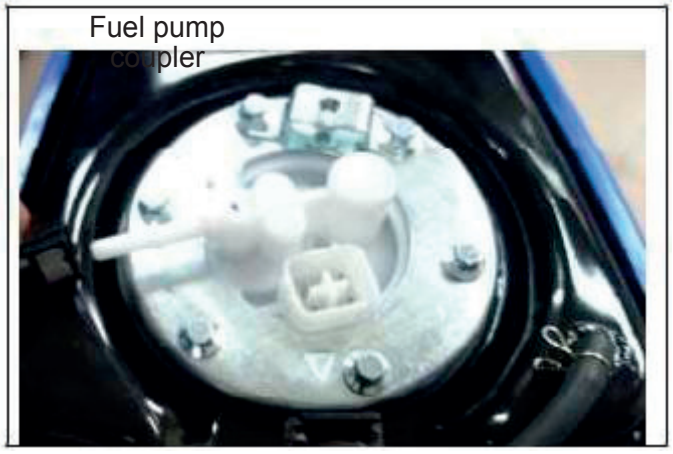

Continued from previous page
YES
Closed-loop systems for mobility
• Observation O2 senslor voltage changes (Standed motorcycle so that engine speed refueling between 4500 to 5500 rpm
• O2 sensor voltage is maintained in a long time within a certain range beating
NG
• O2 sensor fault
• ECU fault
• O2 sensor voltage beating specifications: 100 ~ 900 mV from the two groups within the interactive beating
YES
Engine vacuum
• Use diagnosis tool to detect of the manifold pressure
• Diagnosis tool manifold pressure for compliance with specifications?
NG
• Valve clearance is not normal
• Intake system leak
• Manifold pressure Specifications: 42~49 kPa
YES
Normal starting
Can not starting or starting difficulties
Finish
In traditional engine overhaul way to maintenance

Remove fuel pump/fuel unit
Open seat comp..
Remove seat comp.
Remove rear body cover.
Remove cover ECU.

(Refer to chapter 14)

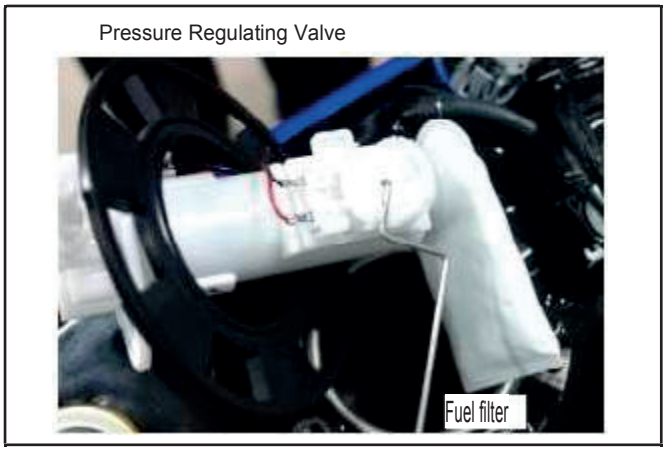


Remove fuel pump lines coupler.
Release, removed the fuel tube.



Remove the fuel tank fixed bolts (Bolt × 2 on both sides), remove the fuel tank.

Remove / Install fuel pump and fuel unit
Remove fuel pump fixed bolts (Bolt × 6), remove fuel pump.
Install In the anti-demolition order.



Cautions

Then remove fuel pump, fuel in fuel tank internal to confirm not excessive.
Then install fuel pump and fuel unit, attention direction.
Confirm whether the fuel filter dirt, obstructive.
Fuel pump installation, to confirm whether it is normal to the fuel out (the pressure about 3 kg/cm2).

Air Cleaner

Clean air cleaner element

Remove air cleaner cover (bolt×4).
Take the filter element out.
Put the filter element into non-inflammable abluent to clean it, if not too much dirt cleared, please new replacement.

Cautions

Forbid to use the gasoline or low firing point oil to wash the air cleaner element .

Install air cleaner element

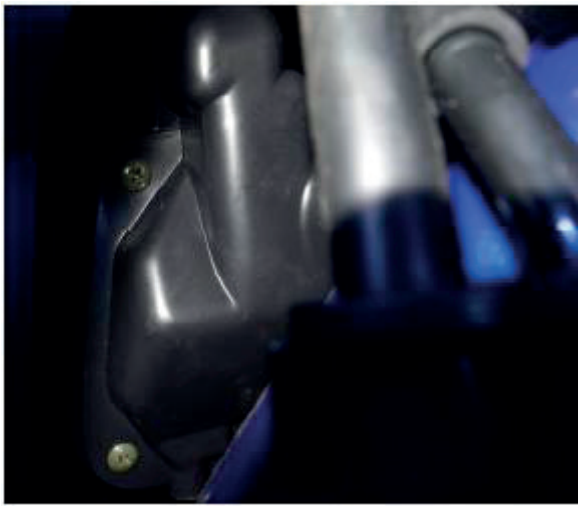
Install In the anti-demolition order.

Cautions

If the dust block the filter element, it will increase the intake resistance and reduce the power output of the engine, this will increase the consumption of the fuel.

Bolt ×4

Air catheter fixed bolts × 1



EFi System Diagnosis Methods

When the motorcycle injection system in the wrong signal, causing abnormal functioning of the engine or can not start engine, warning light at the meter will be lighting, to inform drivers to carry out maintenance.

Overhaul, the diagnosis tool can be used for troubleshooting (refer to diagnosis tool use guide), or manually by the meter warning light inspection revealed that the fault codes (refer to checking signal fault codes discriminate method), the two methods for maintenance.

If the fault has been ruled out or repaired after the inspection light will be extinguished, but ECU fault code will be recorded, so the need to get rid of fault codes. If a fault exists, this system has two kinds of methods to eliminate fault codes respectively in the diagnosis tool removal and manual removal.

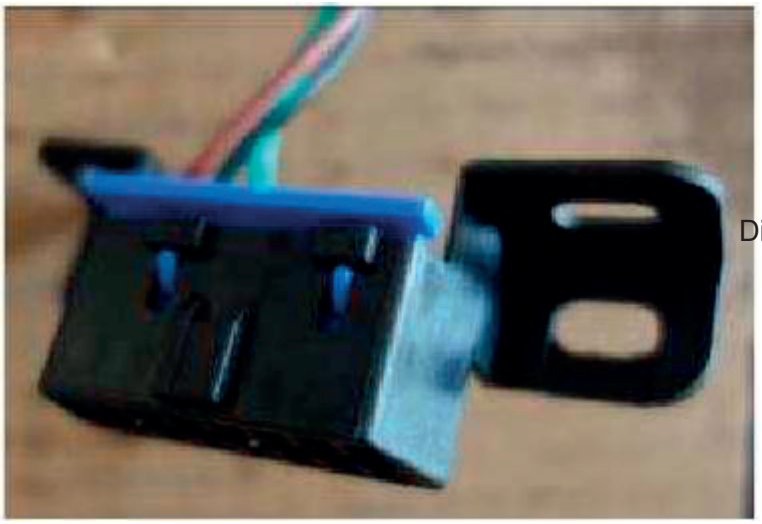
Using diagnostic tool for overhaul

Diagnosis tool will connect to the motorcycle for coupler diagnosis, according to the use of diagnostic tool testing methods, when belong fuel injection system fault or parts fault, according to the diagnosis tool of the fault code display messages do describe parts of the inspection testing maintenance and replacement parts. When after the maintenance, the need to get rid of fault codes (Please refer to detailed steps diagnosis tool of instructions), or fault code will always be stored in the ECU.

Manual inspection

in the meter of

this check light are flashing, it means that the injection system or parts of abnormal situations, but not in the diagnosis tool can be - for the detection, inspection can enjoy for a long time flashing lights flashing and the short period of time to inform the cause of the malfunction (refer to check light fault information fault code table).



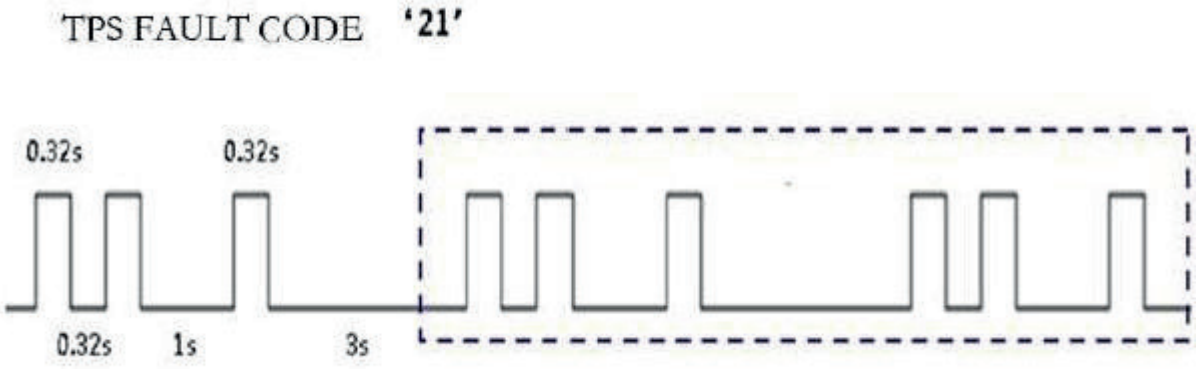
Diagnostic tool coupler

Check Light Fault Codes Differentiation

Check light flashing mode

If problem without diagnosis tool to be detected, it can be cross-access switch”ON”, switch”OFF”, switch”ON”, switch”OFF” switch”ON”, switch”OFF”at least 5 seconds

The motorcycle from the CHK lights flashing signal interpretation, and then the basis for the diagnosis of dynamic information tables on the priorities of light, and prompts you to the motorcycle to the emergence of some warning, or FLASH CODE is to determine what kind of fault, and exclusion.



Fault Code and Sensors Table

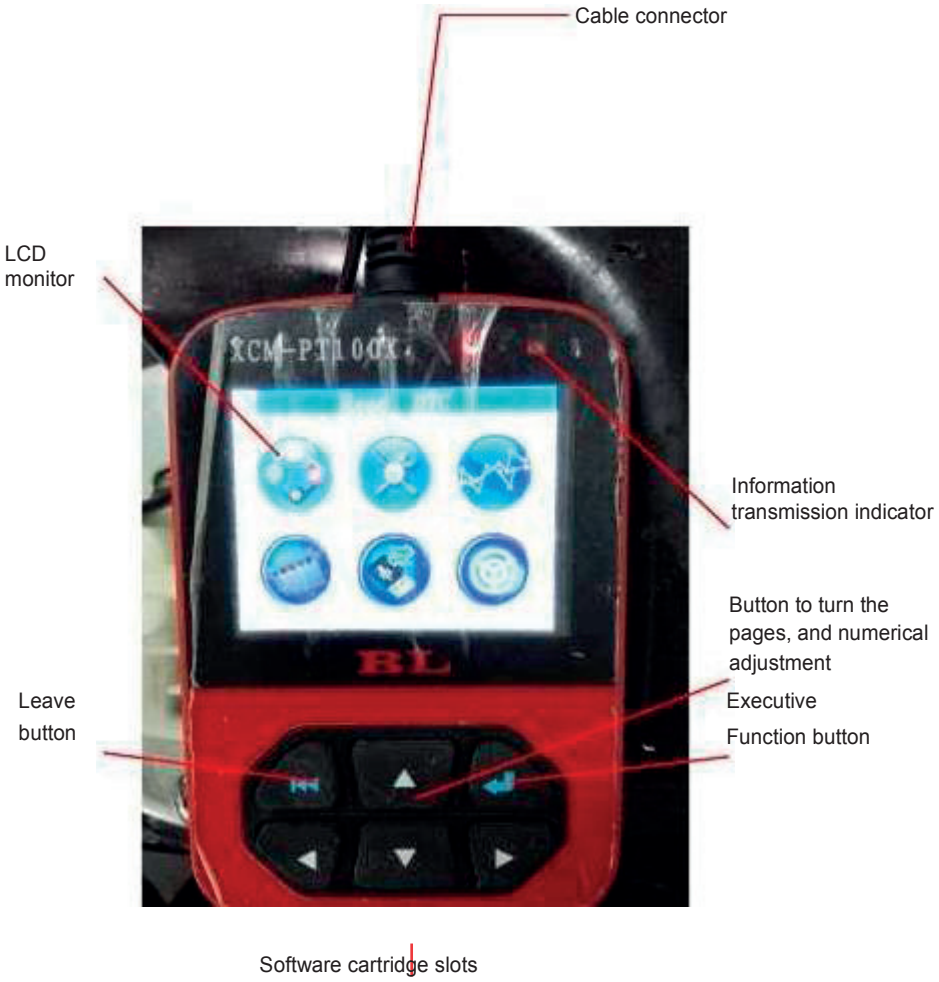
	Fault codes	Fault Description	Parts Inspection
1	0123	Signal range check high for throttle Position Sensor	TP Sensor and wire
2	0122	Signal range check low for throttle Position Sensor	TP Sensor and wire
3	0108	Signal range check high for Manifold absolute pressure sensor	MAP sensor and wire
4	0107	Signal range check low for Manifold absolute pressure sensor	MAP sensor and wire
5	0118	Signal range check high for Engine coolant temperature sensor	TE Sensor and wire
6	0117	Signal range check low for Engine coolant temperature sensor	TE Sensor and wire
7	0113	Signal range check high for Air temperature sensor.	TA Sensor and wire
8	0112	Signal range check low for Air temperature sensor	TA Sensor and wire
9	0132	Signal range check high for Oxygen sensor.	O_2 Sensor and wire
10	0131	Signal range check low for Oxygen sensor	O_2 Sensor and wire
11	0134	Signal range check no activity detected for Oxygen sensor	O_2 Sensor and wire
12	0335	Signal range check no activity detected for Oxygen sensor	Crankshaft Position sensor
13	0262	Short circuit to battery for Injector.	Injector and wire
14	0261	Short circuit to ground for Injector.	Injector and wire
15	0201	Injector open circuit.	Injector and wire
16	2301	Short circuit to battery for Ignition coil.	Ignition coil and wire
17	2300	Short circuit to ground for Ignition coil.	Ignition coil and wire
18	0629	Short circuit to battery for Fuel pump.	Fuel pump and wire
19	0627	Open circuit for Fuel pump.	Fuel pump and wire
20	0032	Short circuit to battery for Oxygen sensor heater circuit.	O_2 Sensor and wire
21	0031	Short circuit to ground for Oxygen sensor heater circuit..	O_2 Sensor and wire
22	0030	Open circuit for Oxygen sensor heater circuit.	O_2 Sensor and wire
23	0509	Short circuit to battery for Stepper motor.	ISC stepper motor and wire
24	0508	Short circuit to ground for Stepper motor.	ISC stepper motor and wire
25	0505	Stepper motor open circuit.	ISC stepper motor and wire
26	0601	Check sum error	Internal Control Module Memory Check Sum

	Fault codes Fault	Fault Description	Check light Check	Check light flashing state Check light flashing	Parts Inspection

Fault Code and Check Light Flashing Lighting Identification Table

	Fault codes	Fault Description		Check light	Check light flashing state	Parts Inspection
1	0123	Signal range check high for throttle Position Sensor	Lighting	2，2		Throttle position sensor and wire
		Fault detection procedures Please refer to the "EFI System components description" throttle position sensor (TPS) chapter				
2	0122	Signal range check low for throttle Position Sensor	Lighting	2，1		Throttle position sensor and wire
		Fault detection procedures Please refer to the "EFI System components description" throttle position sensor (TPS) chapter				
3	0108	Signal range check high for Manifold absolute	lighting	4，2		MAP sensorand wire
		Fault detection procedures Please refer to the "EFI System components description" manifold Absolute Pressure sensor (MAP) chapter				
4	0107	Signal range check low for Manifold absolute	lighting	4，1		MAP sensorand wire
		Fault detection procedures Please refer to the "EFI System components description" manifold Absolute Pressure sensor (MAP) chapter				
5	0118	Signal range check high for Engine coolant	lighting	1，2		Engine temperature sensor and wire
		Fault detection procedures Please refer to the "EFI System components description" engine temperature sensor (WPS) chapter.				
6	0117	Signal range check low for Engine coolant	lighting	1，1		Engine temperature sensor and wire
		Fault detection procedures Please refer to the "EFI System components description" engine temperature sensor (WPS) chapter				
7	0113	Signal range check high for Air temperature sensor	lighting	3，2		Intake temperature sensorand wire
		Fault detection procedures Please refer to the "EFI System components description" intake temperature sensor (TAS) chapter.				
8	0112	Signal range check low for Air temperature sensor	lighting	3，1		Intake temperature sensorand wire
		Fault detection procedures Please refer to the "EFI System components description" intake temperature sensor (TAS) chapter.				
9	0132	Signal range check high for Oxygen sensor		lighting	5，2	O2 Sensorand wire
		Fault detection procedures Please refer to the "EFI System components description" O2 sensor chapter.				
10	0131	Signal range check low for Oxygen sensor				
		Fault detection procedures Please refer to the "EFI System components description" O2 sensor				
11	0134	Signal range check no activity detected for Oxygen	lighting	5，3		O2 Sensorand wire
		Fault detection procedures Please refer to the "EFI System components description" O2 sensor				
12	0262	Short circuit to battery for Injector.		lighting	1，6	Injector and wire
		Fault detection procedures Please refer to the "EFI System components description" fuel injector chapter.				
13	0261	Short circuit to ground for Injector.				
		Fault detection procedures Please refer to the "EFI System components description" fuel injector chapter				
14	0201	Injector open circuit.				
		Fault detection procedures Please refer to the "EFI System components description" fuel injector chapter				
15	2301	Short circuit to battery for Ignition coil.		lighting	2，6	Ignition coil and wire
		Fault detection procedures to adhere to the traditional way				
16	0629	Short circuit to battery for Fuel pump.		lighting	3，6	Fuel pump and wire
		Fault detection procedures Please refer to the "EFI System components description" fuel pump chapter.				
17	0627	Open circuit for Fuel pump				
		Fault detection procedures Please refer to the "EFI System components description" fuel pump chapter.				
18	0509	Short circuit to battery for Stepper motor.				
		Fault detection procedures Please refer to the "EFI System components description" idle speed control valve (ISC) chapter.chapter.				
19	0508	Short circuit to ground for Stepper motor.		lighting	4，5	Step motor and wire

EFi System Diagnostic Tool - V70



Note:

- When problems occurred, can be used for diagnosis tool of the fault is detected, and exclusion.
- In addition to testing, troubleshooting, another of the operation can be carried out data analysis-type monitor.

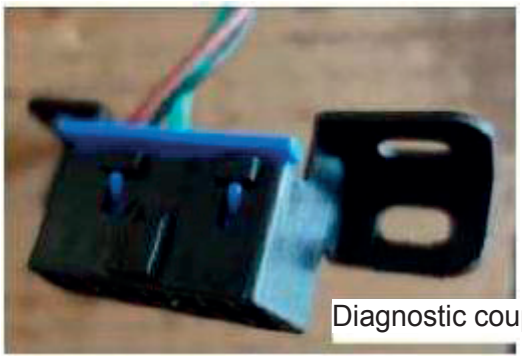
Method of Use:

1. Maintain engine flameout state, do not open main switch.
2. Opened the seat comp.,remove the box tool (screw x1), connected to the diagnostic connector for diagnosis tool.
3. Then open the main switch and the diagnosis tool power switch after diagnosis display screen appeared the words connection.
4. The main screen (there are 6 major functions: ECU VERSION, FAULT DIAGNOSIS, READ DATA, ECU DATA UPGRADE, STORAGE MODE and SYSTEM SETTINGS)
5. Use ▲, ▼ select button under the function, press the " ↵" button access into various functions.
   Example: select "FAULT DIAGNOSIS," by the " ↵" button, the screen showed that"READ DTC"
   And "CLEAR DTC",select "READ DTC", by the " ↵" button, the screen showed that the existing fault codes; indicates no fault "system is OK."
6. Press " " button to leave of the various functions.
7. Must to close the main switch or power switch of the diagnosis tool after, and then can removal of diagnosis tool coupler.

Diagnostic Tool Use Note

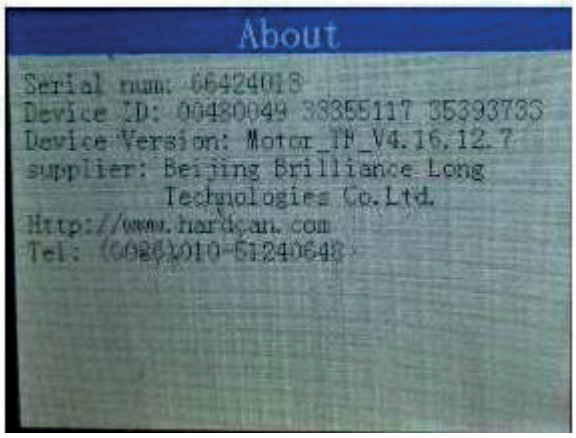
Diagnosis of connectivity

1. For the diagnostic tool coupler access to the motorcycle injection system diagnostic signal coupler.
2. main switch ON.
3.



Diagnostic coupler

4. cartridge content display on screen (such as icon), by the beginning of the implementation of any button.
5. Display diagnostic software release; select " SYSTEM SETTINGS,"press the " " button the screen showed that"LANGUAGE CHOOSE"and to and "ABOUT",select "ABOUT"to the implementation.



Options main functional areas:
1. ECU VERSION
2. FAULT DIAGNOSIS
3. READ DATA
4. ECU DATA UPGRADE
5. STORAGE MODE
6. SYSTEM SETTINGS

Use "" "▽""◁ ""▷ " button, select mobile anti-white subtitles implementation of the project, and then press the " "key to the implementation.

4. Fuel Injection System

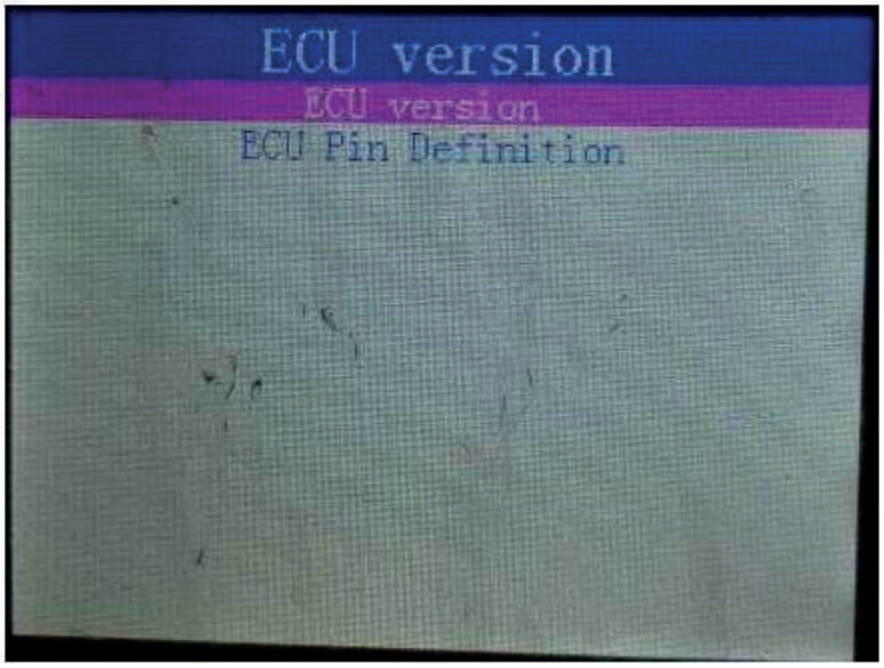
1. ECU VERSION

In the directory functions used"△ "▽""◀ " "▶" button, select ECU ID project, press the " ↵" buttom to the implementation of information systems function.

ECU VERSION containing two functions:

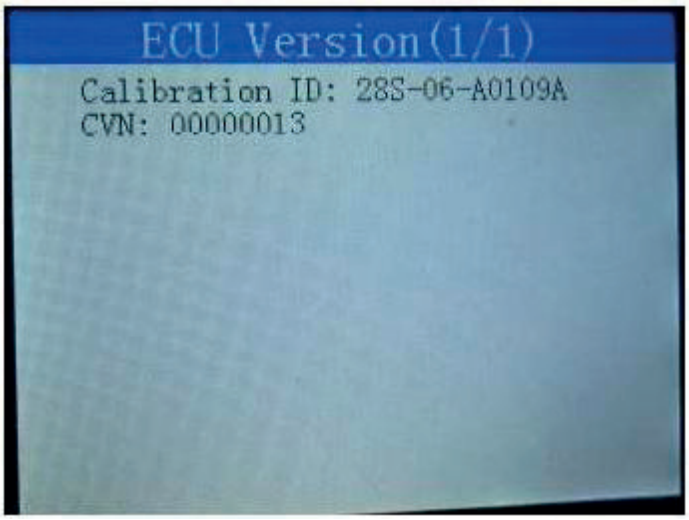
1-1. ECU VERSION

1-2. ECU Pin Definition



1-1. ECU VERSION

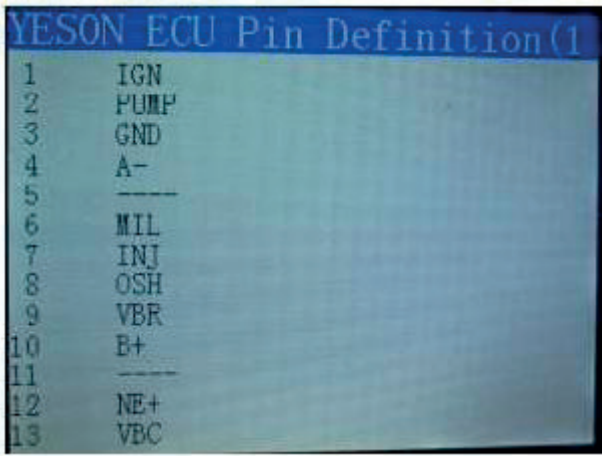
Use "▲" "▼" button, select ECU VERSION projects, press the " ↵" buttom to the implementation. view ECU information.

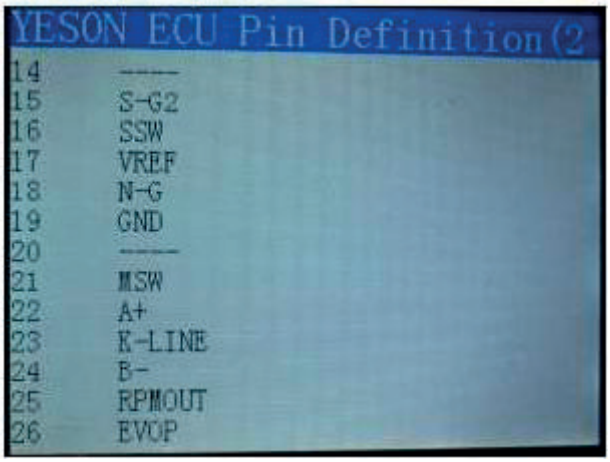


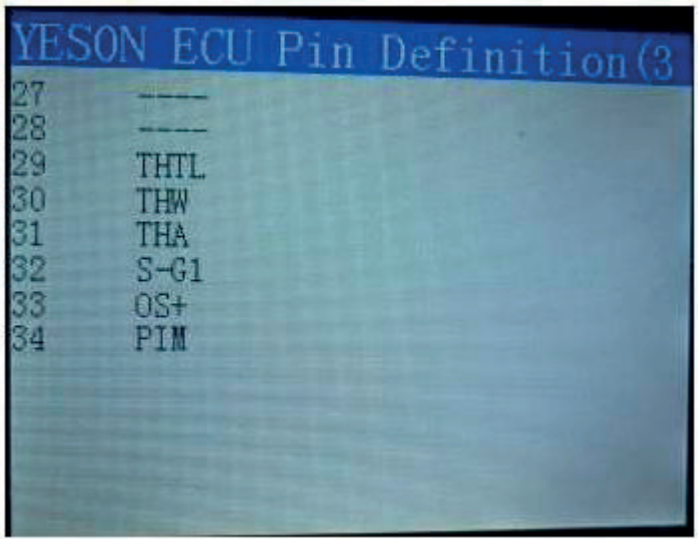
1-2. ECU Pin Definition

Use "▲" "▼" button, select the ECU pin project, and press the " ↵" button to the implementation of the ECU pin functions.

ECU pin assign total of 3 pages that can be used "◄ left" and "right ►" button, view the page note.







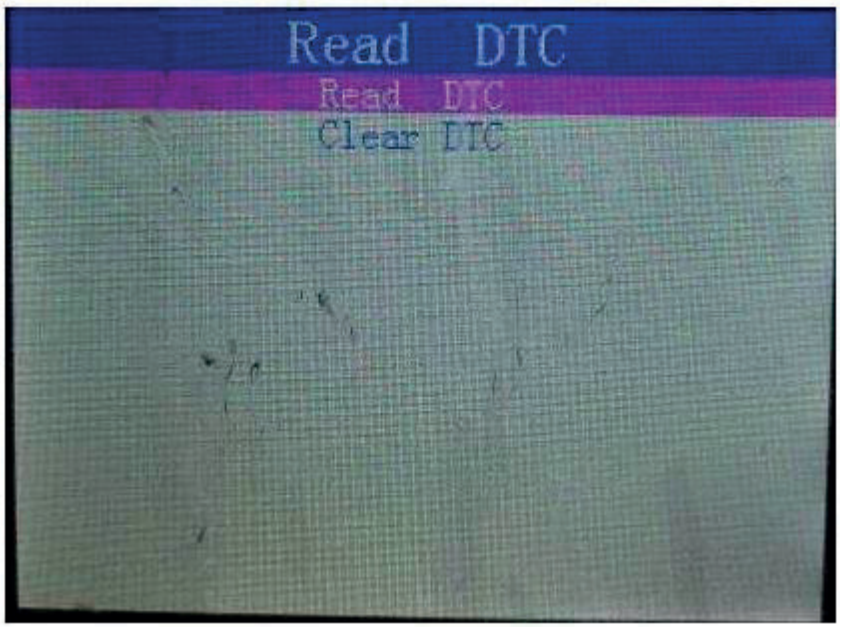
2. FAULT DIAGNOSIS

In the directory functions used "▲" "▼" button, select " FAULT DIAGNOSIS " project, press the " ↵" key to the implementation of information systems function.

FAULT DIAGNOSIS containing two functions:

2-1. READ DTC

2-2. CLEAR DTC



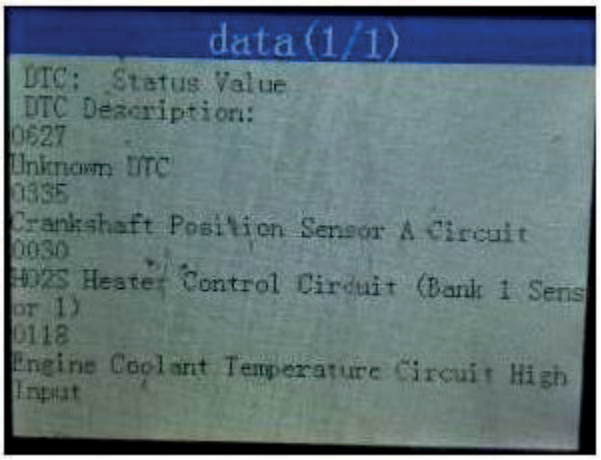
2-1. READ DTC

Use "▲" "▼" button, select **READ DTC** projects, press the " ↵" buttom to the implementation. the message began to read fault.

Fault Code: electronic injection system that had happened fault of the message (whether or not completion of repair).

Without any fault is that no showing.

If the system has faulty code, that is showing the fault code, that can be used "◄ left" and "right ►" or "▲" "▼" button to select the fault code (selected before the code " " tags) that, press the " ↵ " button, the code can be read descriptions and fault handling.



2-2. CLEAR DTC

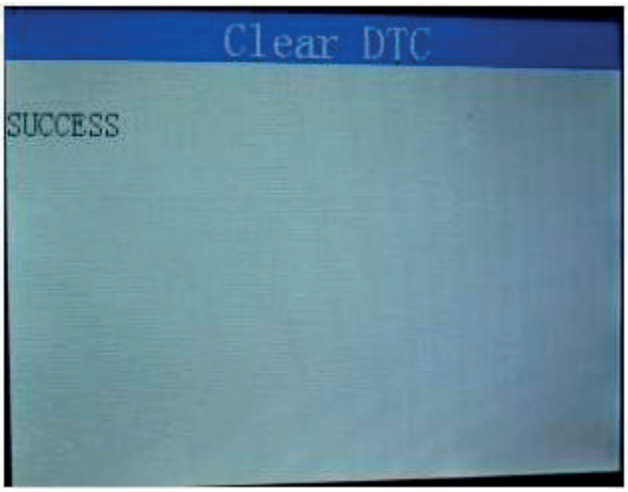
In the directory functions used "▲" "▼" button, select " **CLEAR DTC** " project, press the " ↵" key to the implementation.

Conditions: The main switch "ON", or in the engine running state, the fault code can be removed

Fault code removed, namely showing the " SUCCESS.!".

Press the " "button, the function can return to the directory screen.

.



3.READ DATA

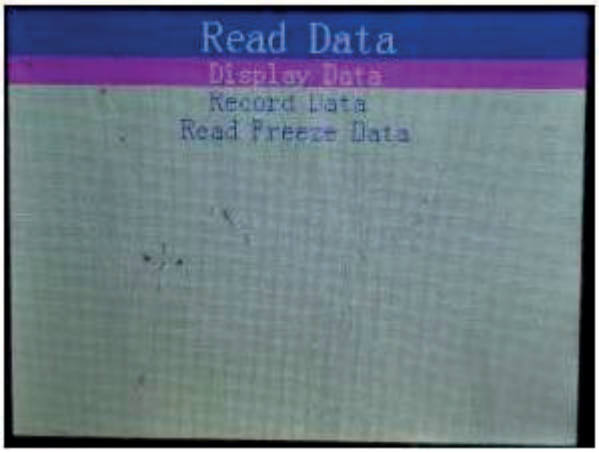
In the directory functions used "▲" "▼" button, select **READ DATA** project, press the " ↵" buttom to the implementation of information systems function

READ DATA containing three functions

3-1. DISPLAY DATA

3-2. RECORD DATA

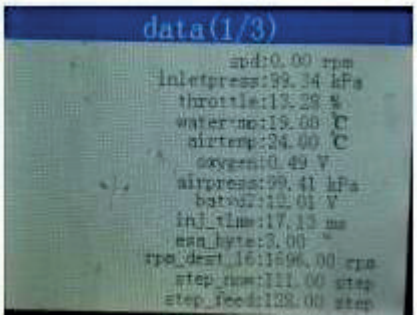
3-3. READ FREEZE DATA

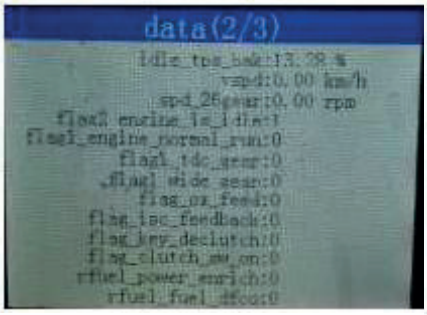


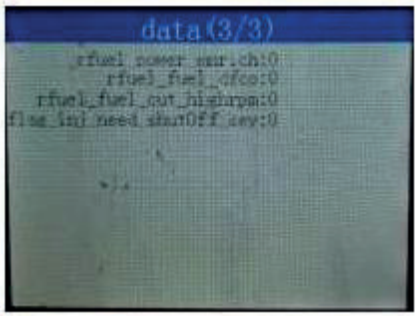
In the directory functions used "▲" "▼" button, select "DISPLAY DATA " project, press the " ↵" key to the implementation

A total of 3 pages, are able to use "◄ left" and "right ►" button, view injection system information

On the any screen, press the " " button, the function can return to the directory screen.



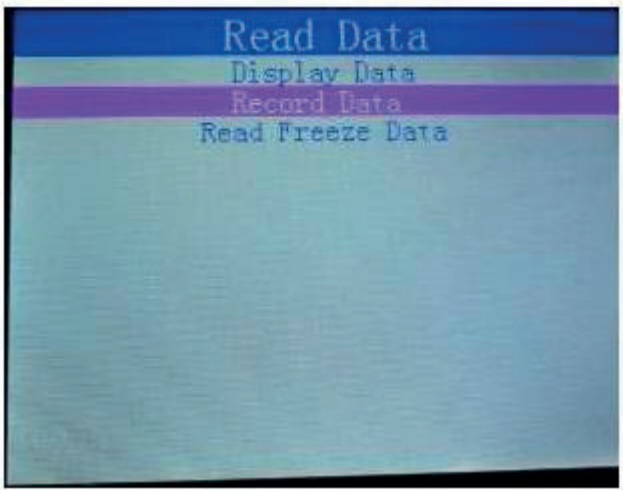


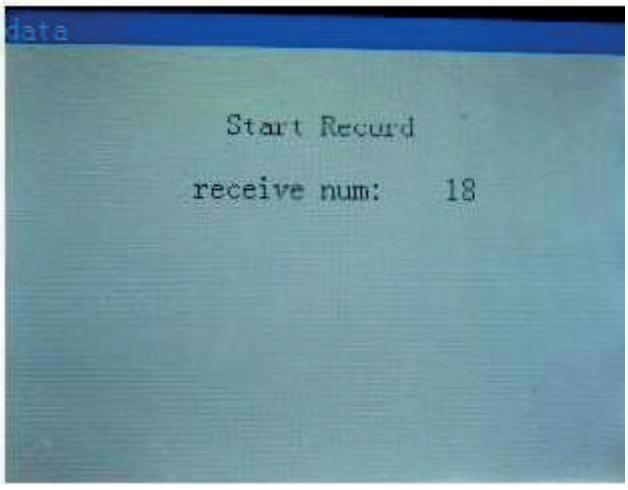


3.2.RECORD DATA

In the directory functions used "▲" "▼" button, select " RECORD DATA " project, press the " ↵" key to the implementation.

Conditions: The main switch "ON", ane in the engine running state





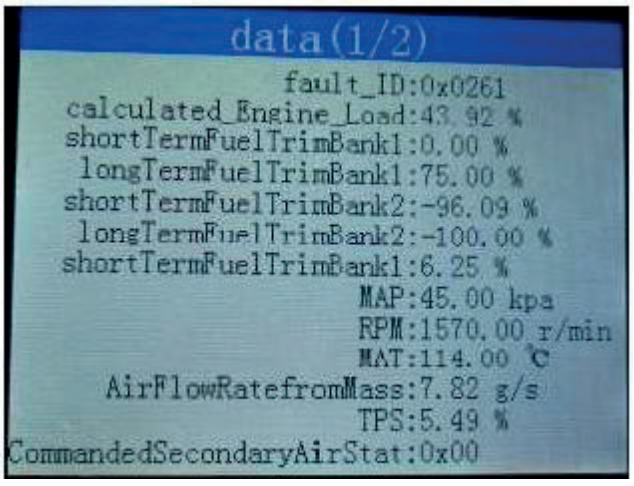
3.3. FREEZED DATA

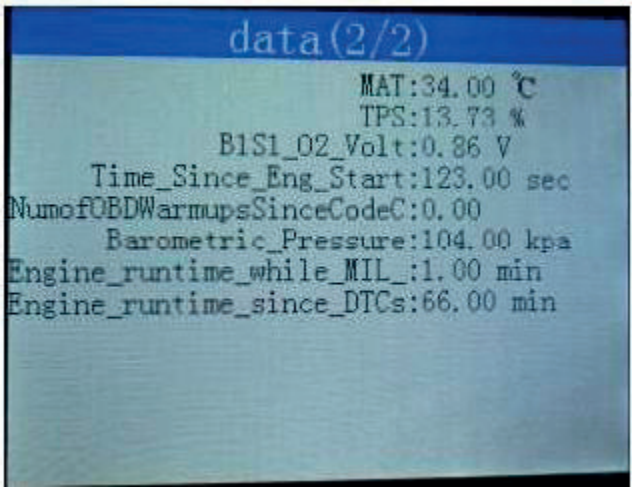
Objective: When a sensor fault, the EMS system will record all the parameters of fault signals, in order to facilitate fault diagnosis.

In the directory functions used "▲" "▼" button, select "FREEZED DATA" project, press the " ↵ " key to the implementation.

Only one page, at any screen, press the " ← " button, the function can return to the directory screen.
In the "FREEZED DATA" of the screen use "▲" "▼" button to move the left side of the project "→" symbol selected items

Able to use "◄ left" and "right ►" button, can transform View wave numerical size.





4. ECU DATA UPGRADE

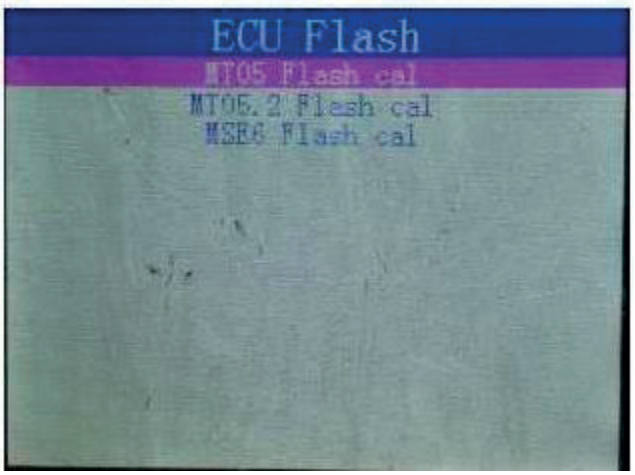
In the directory functions used "▲" "▼" button, select ECU DATA UPGRADE project, press the " ↵" buttom to the implementation of information systems function

ECU DATA UPGRADE containing three functions

4-1. MT05 FLASH CAL

4-2. MT05.2 FLASH CAL

4-3. READ FREEZE DATA



5. STORAGE MODE

PT100 with a data cable connected to the computer, making the PT100 into the storage mode, this function can be used to upgrade their diagnostic and exporting data stream file or import ECU upgrade data and other functions.

.

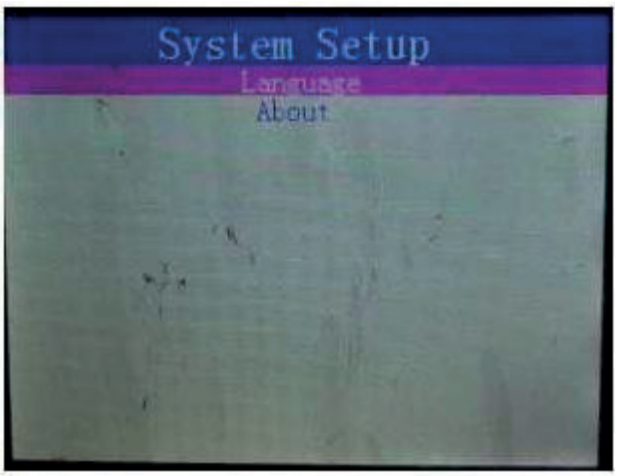
6. SYSTEM SETTINGS

In the directory functions used "▲" "▼" button, select **SYSTEM SETTINGS** project, press the " ↵ "button to the implementation of information systems function.

SYSTEM SETTINGS containing two functions

6-1. LANGUAGE

6-2. ABOUT



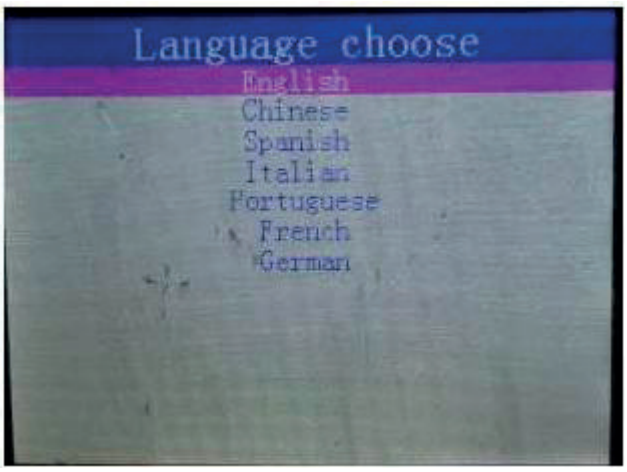
6-1. LANGUAGE

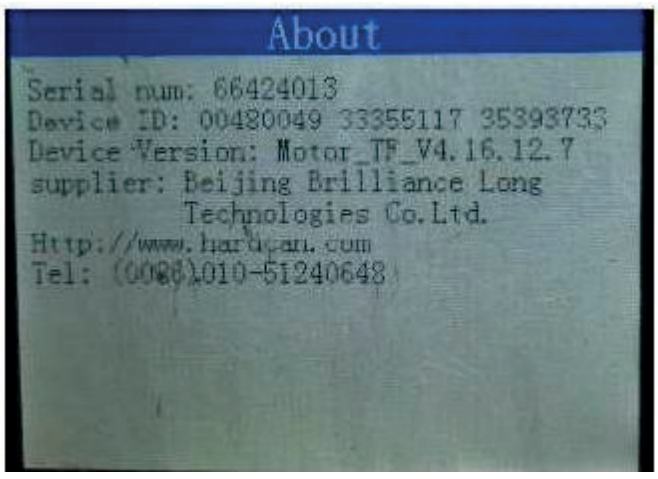
In the directory functions used "▲" "▼" button, select " **LANGUAGE** " project, press the " ↵" key to the implementation. Use "▲" "▼" button, language can be selected.

6-2. ABOUT.

In the directory functions used "▲" "▼" button, select " **ABOUT**" project, press the " ↵

Press the " ↵button, the function can return to the directory screen.





4. Fuel Injection System

Troubleshooting Table

Test items / Abnormal phenomena		Comprehensive testing program							Parts		
		Power voltage	Fuel press.	Ignition state	Engine Injection vacuum state		closed-loop	Fault Code	ECU	Throttle position sensor	Engine temp. sensor
Start state	Can't start	O	O	O	O	O		O	O		
	Difficult to start	O	O		O			O		O	O
Idle state	Without Idle			O	O	O		O		O	O
	Idle not smooth					O	O	O	O	O	
	RPM NG							O	O		
	CO NG			O			O	O	O	O	
Acceler-ation	Not smooth		O	O	O	O		O	O	O	O
	Inability and slow Idle		O	O	O	O		O	O	O	O
Flameo-ut	Flameout				O			O			
	Acceleration flameout							O	O		
Related spare parts		Roll over sensor	Fuel pump	Ignition coil	Inlet pipe	Injector	O2 sensor				
		Power relay	Fuel pressure adjustment valve	Spark plug	Cylinder head	Fuel pump	Secondary air injection solenoid valve				
		Security unit	Fuel pump relay		Inlet pressure sensor	Fuel pressure adjustment valve					
		Main switch	Fuel filter								
		Battery									

Notes: 1. Integrated test motorcycle, according to the "Comprehensive Maintenance list" implementation.
2. Spare parts, according to the "EFI System components description" implementation.

Comprehensive Maintenance List

	Maintenance Project	Testing Procedures	Test items	Determine benchmarks	Fault reasons
1	Power and voltage	●Use meter direct measurement battery voltage ●Use diagnosis tool detection of battery voltage	● Battery voltage	● Battery voltage = 10V Above	● Battery electricity ● Battery connector loose ● Harness circuit opening ● ECU coupler not connected properly
2	Fuel pressure	●Use fuel pressure gauge, connected in series between the injector and the Pressure Regulating Valve ●Main switch ON, but not start engine ●Check fuel pressure ●Start engine (idle) ●Check change of the fuel pressure ●throttle several rotation ●check to the change of fuel pressure again	● Open the main switch, but do not to start the engine of pressure ● Pressure in idle ● Rotating throttle, situation of pressure changes	● Open main switch, but do not start the engine of pressure: = 294±6kPa (Stable value) ● Idle state: pressure = 294±6kPa (Beating situation from top to bottom) ● rotation throttle moment: pressure = 294±6kPa (Slightly beating)	● Fuel not enough ● Security switch not disarm ● Fuel pump relay fault ● Fuel pump fault ● Injector fault ● ECU fault
3	Ignition state	●The spark plug removed from the cylinder head, but the power lines still ring ●Start engines or use for the diagnosis tool of output View spark plug ignition conditions	● Spark plug specifications ● Whether the spark plug ignition ● Spark plug sparks whether it is normal strength	● Specifications: NGK-BR8TC ● Ignition conditions: With traditional engines found ways	● Spark plug fault ● Roll over sensor fault ● ECU No. 5 pin fault ● Ignition coil fault ● Crankshaft position sensor fault
4	Injection state	● The injector removed from the throttle body, but not dismantle pipeline ● Main switch ON, but not start engine ● Investigation the injector it's leaking fuel? ● Once again start engines or use for the diagnosis tool of output function ● Check injector fuel injection and the injection situation	● Open the main switch, but did not start engine the injection situation ● Injector state when start	● Not started, injector not leaking fuel ● In started, the injection state must show fan shape	● ● Fuel pump relay fault ● Fuel pump fault ● Injector fault ● ECU fault
5	Closed - loop control system	● Use of diagnostic tool observation O2 Sensor voltage changes	● Stable condition, sensor voltage variation (Idle continued 5 minutes later to measurement)	● Idle stable condition: O2 Sensor voltage = 50 ~ 200mV (Show from top to bottom beating phenomenon)	● O2 Sensor fault ● ECU fault
6	Fault Code Detection	● Use of the diagnosis tool existing fault-detection code or historical Fault Code ● Elimination of the implementation of fault codes, check can be eliminated ● Once again start engine ● Check fault is it happen again	● Diagnosis tool of the fault code is it can be eliminated ● Start again, the fault is it will happen again	● Without any residual Fault Code ● If residual Fault Code, according to the "Fault Code Maintenance Form" implementation of troubleshooting	● throttle position sensor fault ● Engine temperature sensor fault ● Intake temperature sensor fault ● Manifold pressure sensor fault ● O2 Sensor fault ● Crankshaft position sensor fault ● ECU fault ●

Notes: 1.Fuel pressure gauge connected between the fuel tank and injector, open the main switch to repeatedly shut down, fuel system makes pressure stability.
2. Injector and injector cap tightly by hands, fuel spills should not be the case

5. Engine disassembly

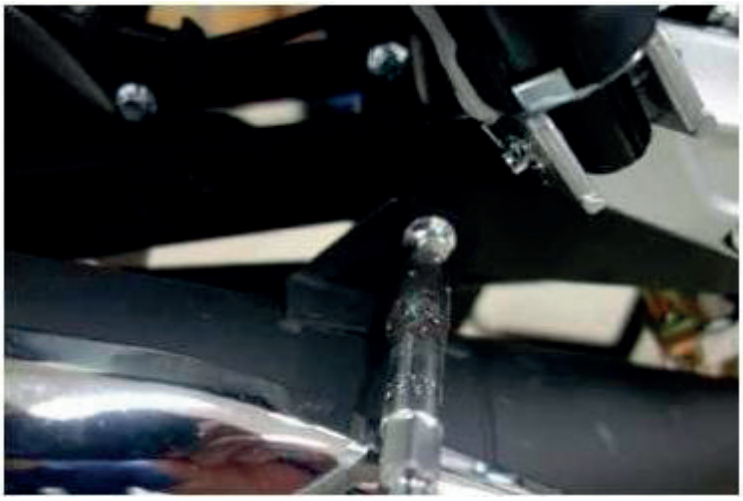
1、Refer to plastics disassembly；

2、Unplug oxygen sensor connector

；

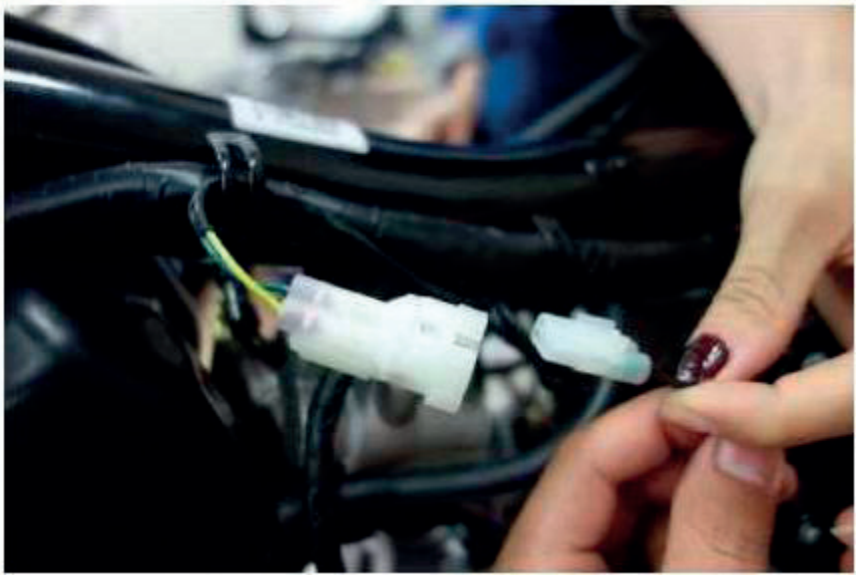
3、Strike the fastening nut between muffler and cylinder；

4、Strike the fastening nut of muffler panel, and take down muffler；

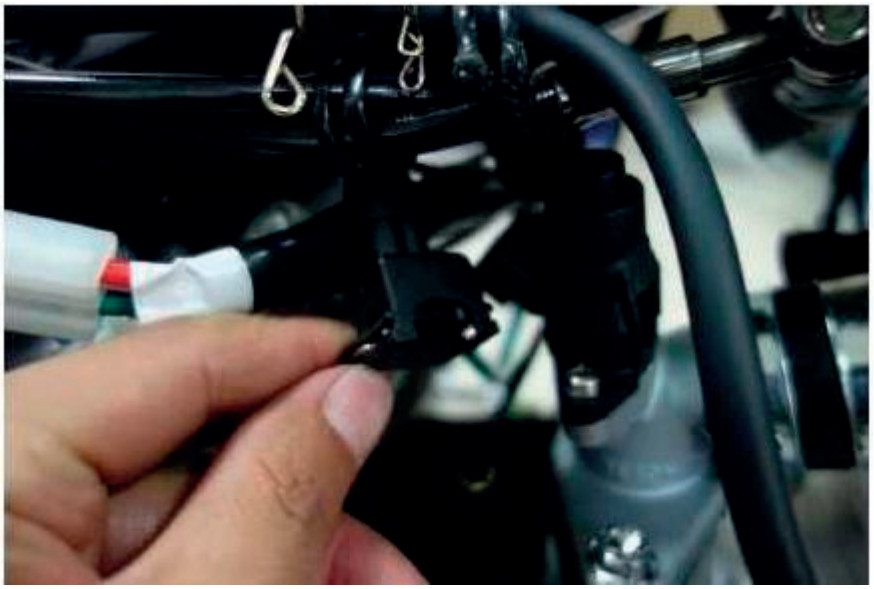


5、Unplug magneto trigger coil, stator and gear display connector；

6、Unplug temperature sensor connector；



7、Unplug fuel injector connector；



8、Unplug high pressure oil pipe quick connector；

9、Take down starting motor switch；

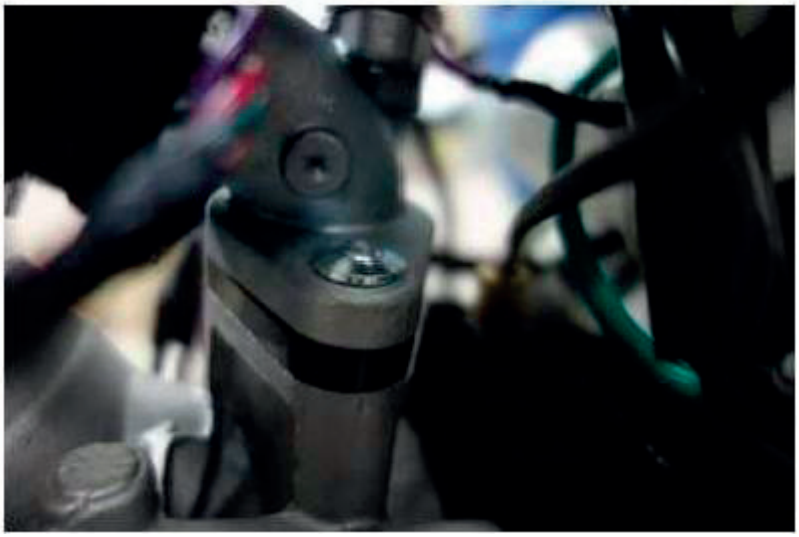
10、Take down high pressure cap；

11、Take down gear shift pedal；

12、Take down left and right crankcase cover；

13、Take down drive sprocket and chain；

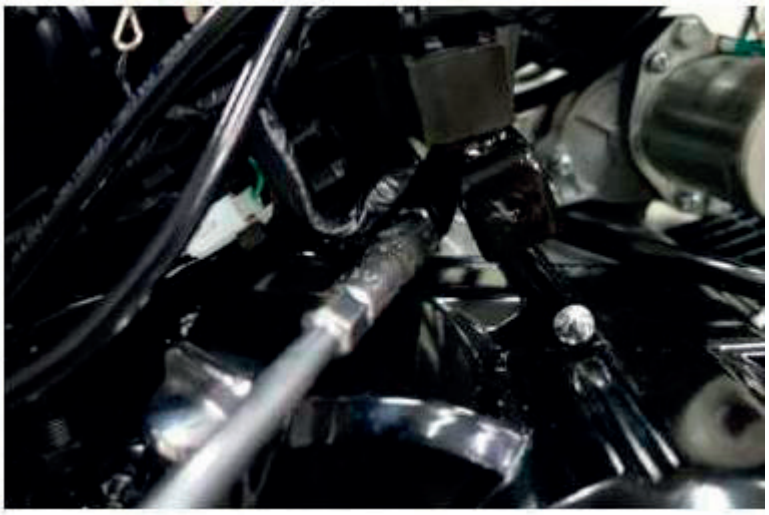
14、Due to using anti tamper screw, the intake pipe must be integrally disassembled with the engine；



15、Loosing connecting pipe clamp screw, and separating connecting pipe from air inlet pipe；

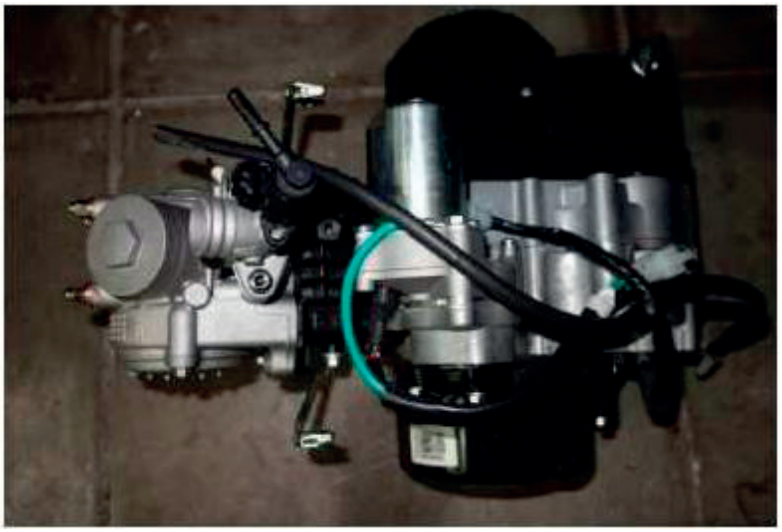
16、Take down front brake reset spring；

17、Take down engine suspension fastening nut；

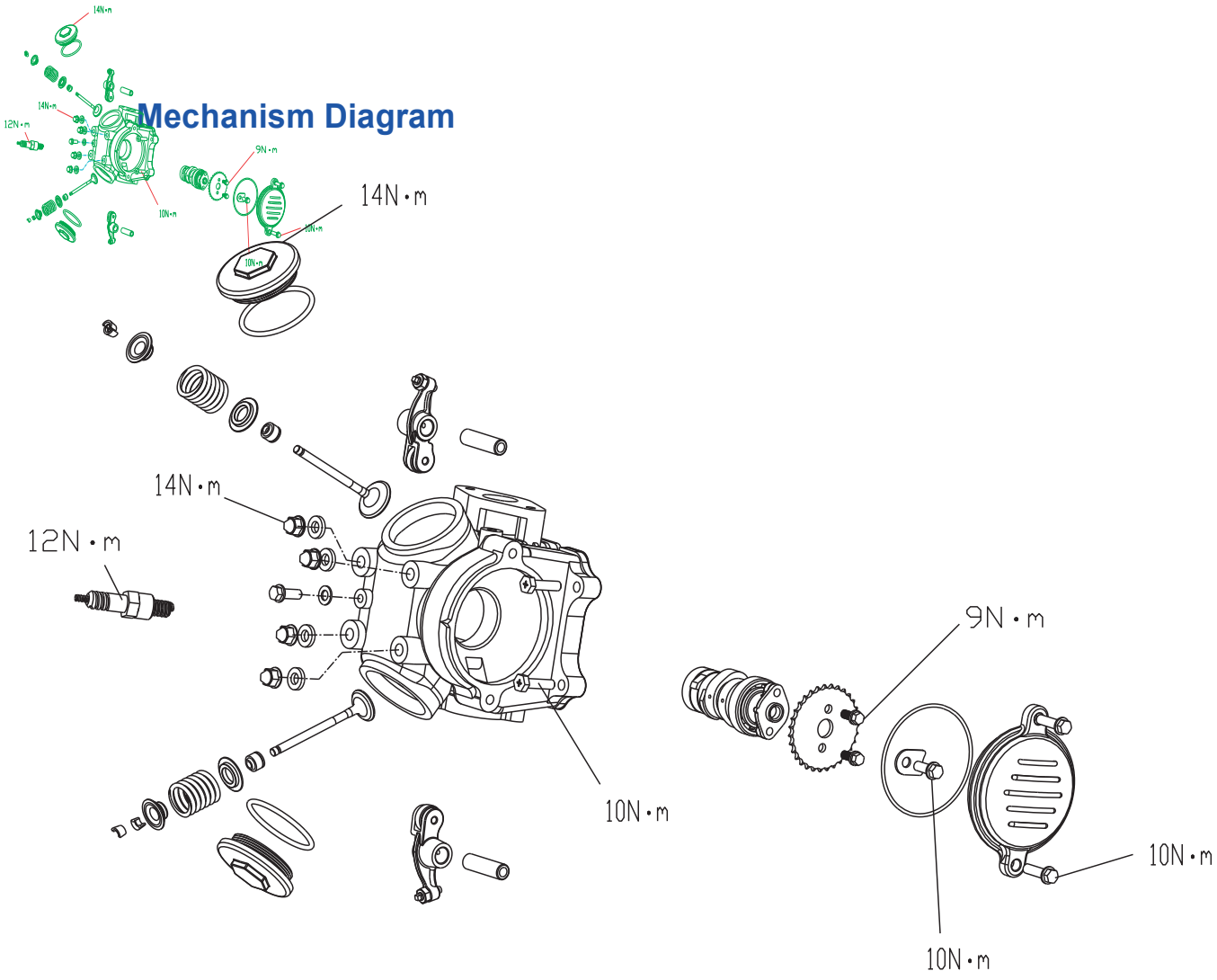


18、pull out blot and take down engine；

19、Take down foot side stand, engine temperature sensor and starting arm；



Mechanism Diagram



Precautions in Operation

This chapter is contained maintenance and service for cylinder head, valve, and camshaft as well as rocker arm.

Remove the engine from the frame before repairing the cylinder head.

Specification

Item			DY/Sprinter 125	
			Standard	Limit
Compression pressure			12±2kpa	---
Camshaft	Height of cam lobe	Intake	33.193-33.353	33.000
		Exhaust	32.906-33.062	32.68
Rocker arm	ID of valve rocker arm		10-10.015	10.1
	OD of valve rocker arm shaft		9.972-9.987	9.910
Valve	OD of valve stem	Intake	4.975-4.99	4.9
		Exhaust	4.955-4.97	4.9
	Guide seat		5-5.012	5.03
	Clearance between valve stem and guide	Intake	0.01-0.037	0.08
		Exhaust	0.03-0.057	0.1
	Free length of valve spring	Inner	---	---
		Outer	30.3	28.7
	Valve seat width		1	1.6
Tilt angle of cylinder head			---	0.05

Torque Value

Cylinder head bolt (LH)	10N • m
Cylinder head Nut	14N • m
Valve cover	14N • m
Spark plug	12N • m
Cylinder head left cover bolts	10N • m
Cam sprocket bolt	9N • m
Cam baffle bolt	10N • m

Troubleshooting

Engine performance will be affected by troubles on engine top parts. The trouble usually can be determined or by performing cylinder compression test and judging the abnormal noise generated.

Low compression pressure

1. Valve

1.1 Improper valve adjustment
1.2 Burnt or bent valve
1.3 Improper valve timing
1.4 Valve spring damage
1.5 Valve carbon deposit.

2. Cylinder head

2.1 Cylinder head gasket leaking or damage
2.2 Tilt or crack cylinder

3. Piston

Piston ring worn out.

High compression pressure

Too much carbon deposit on combustion chamber or piston head

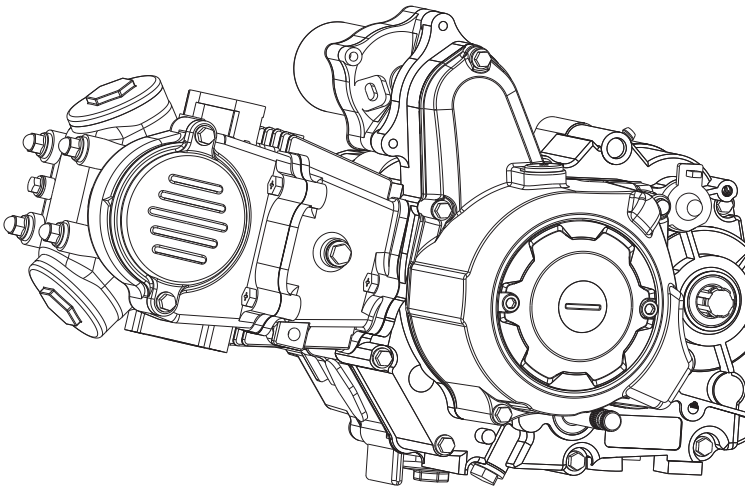
Noise

Improper valve clearance adjustment
Burnt valve or damaged valve spring
Camshaft wear out or damage
Chain wear out or looseness
Auto-tensioner wear out or damage
Camshaft sprocket
Rocker arm or rocker arm shaft wear out

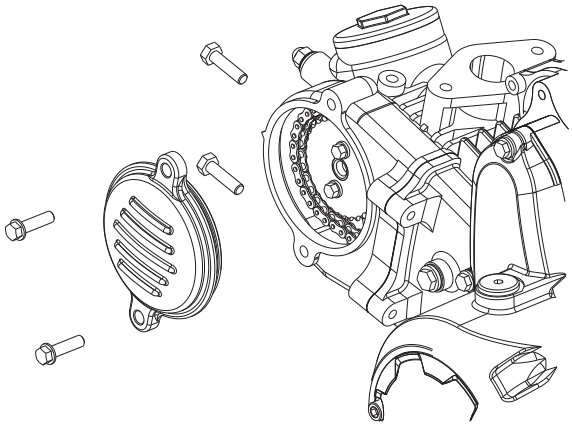
Cylinder Head Removal

Remove engine. (Refer to chapter 5)

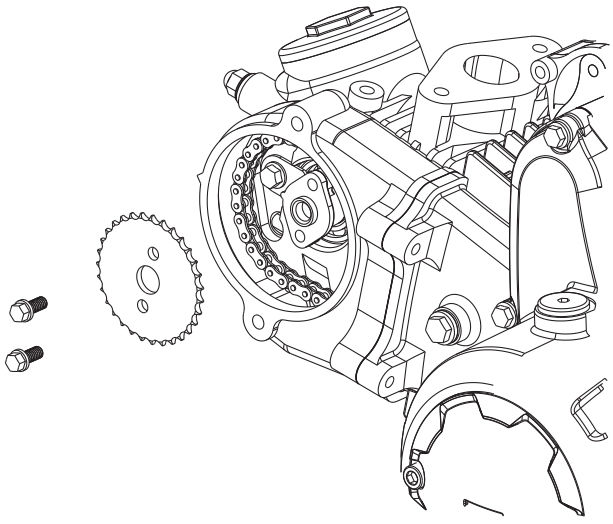
Engine



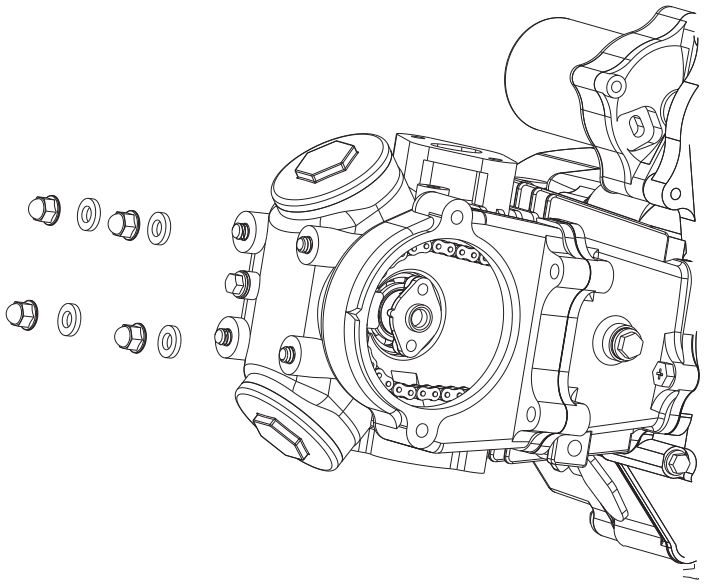
Take down cylinder head left cover fastening bolt and cylinder head fastening bolt



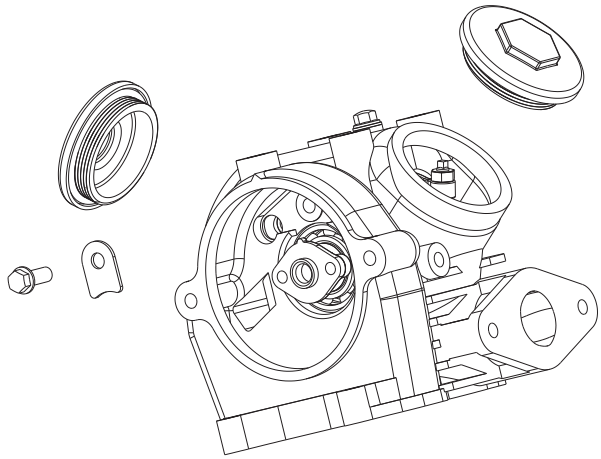
Take down timing drived sprocket fastening bolt and timing drived sprocket



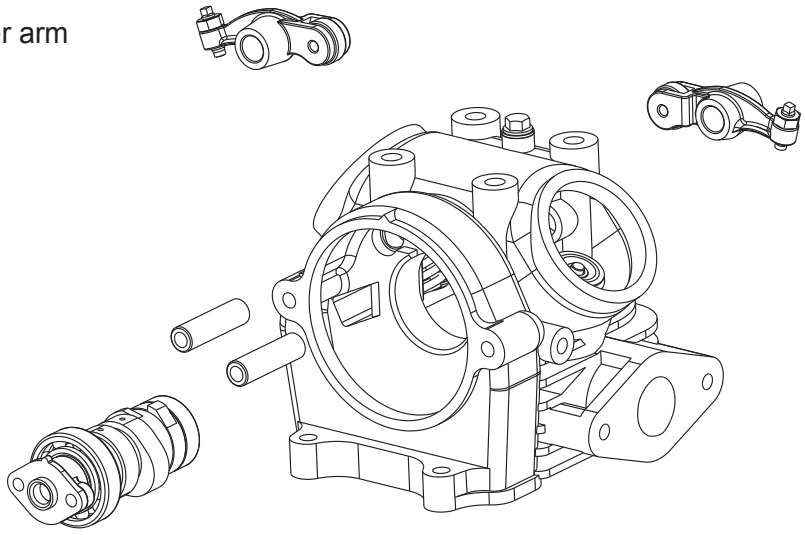
Remove cylinder head fastening nut and washer



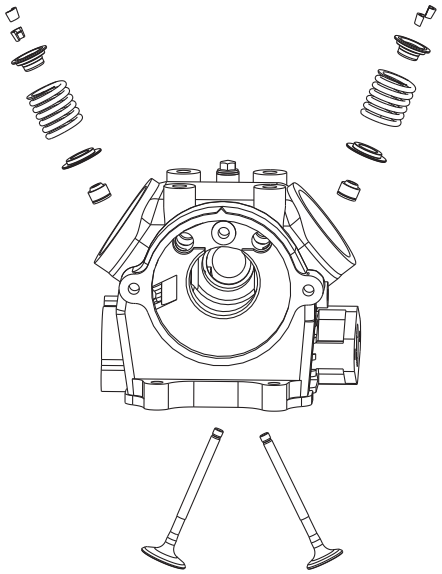
Remove air valve cap and camshaft limit plate and bolt



Remove rocker arm shaft, rocker arm and camshaft

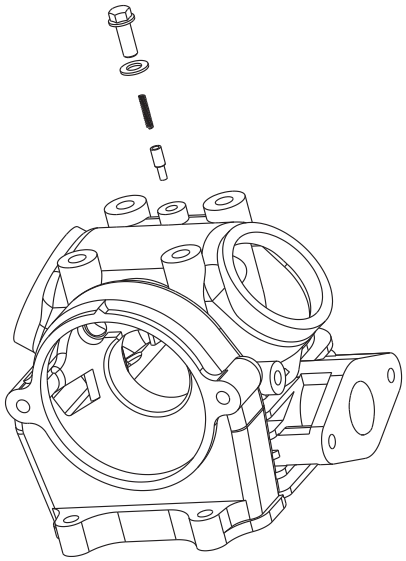


Remove valve cotters, spring retainers, springs and Valve



Remove bolt and washer, pressure relief

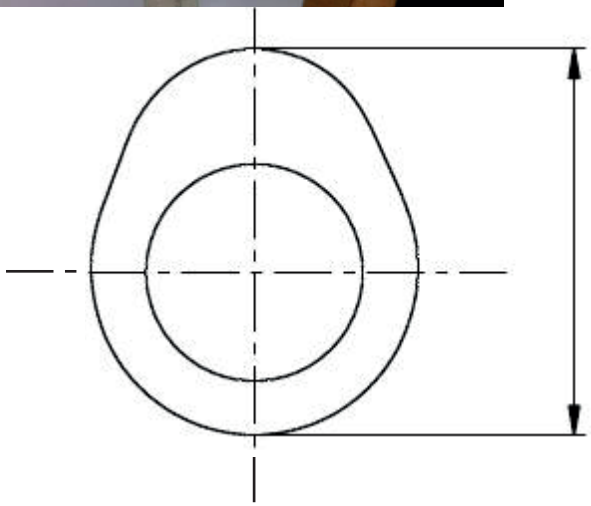
spring and pressure relief cap pillar



Cylinder Head Inspection

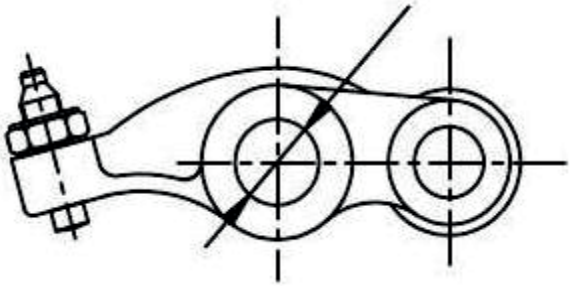
Check if spark plug and valve holes are cracked.
Measure cylinder head warp with a 刀口尺
and thickness gauge.
Service limit: 0.05 mm

Camshaft
Inspect cam lobe height for damaged.
Service Limit (DY/Sprinter 125) :
IN: Replacement when less than 33.00mm
EX: Replacement when less than 32.68mm

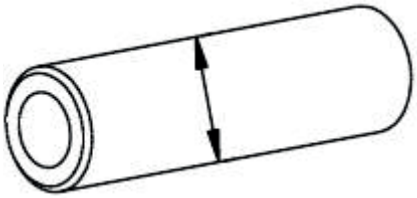


Inspect the camshaft bearing for looseness or wear out. If any damage, replace whole set of camshaft and bearing.

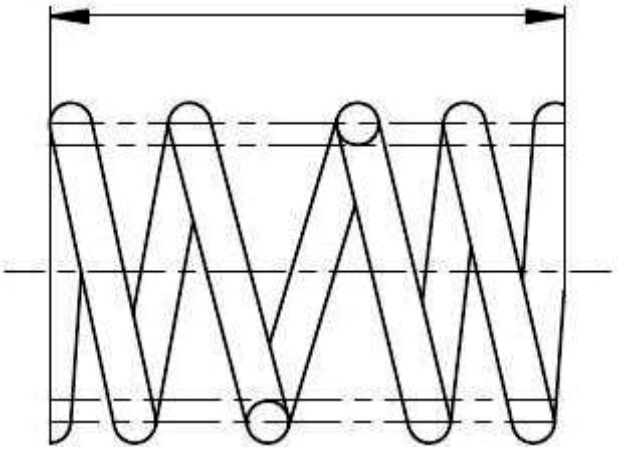
Rocker Arm
Measure the cam rocker arm I.D., and wear or damage, oil hole clogged?
Service Limit (DY/Sprinter 125) :
Replace when it is less than 10.100 mm.



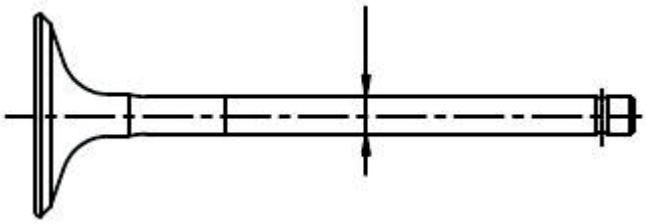
Rocker Arm Shaft
Measure the active O.D. of the cam rocker arm shaft and cam rocker arm.
Service Limit (DY/Sprinter 125) :
Replace when it is less than 9.910 mm.



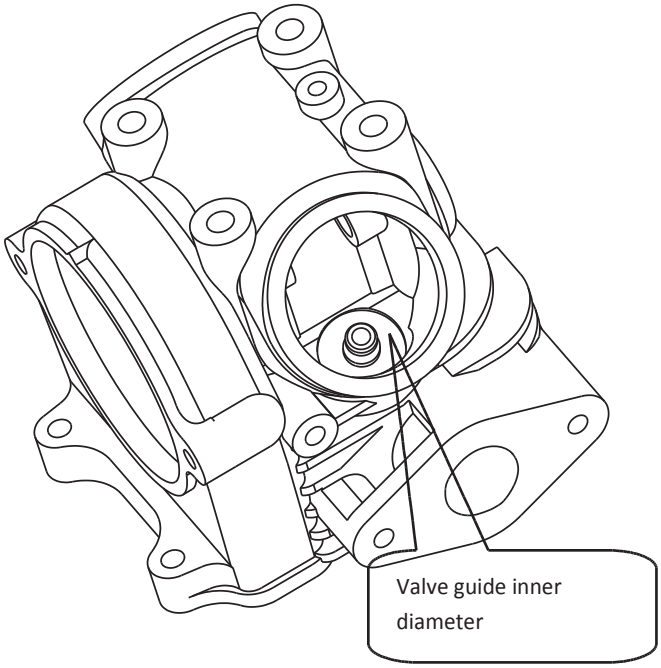
Valve spring free length
Measure the free length of intake and exhaust valve springs.
Service limit:
spring 28.70 mm



Valve stem
Check if valve stems are bend, crack or burn. Check the operation condition of valve stem in valve guide, and measure & record the valve stem outer diameter.
Service Limit: IN: 4.90 mm
EX: 4.90 mm



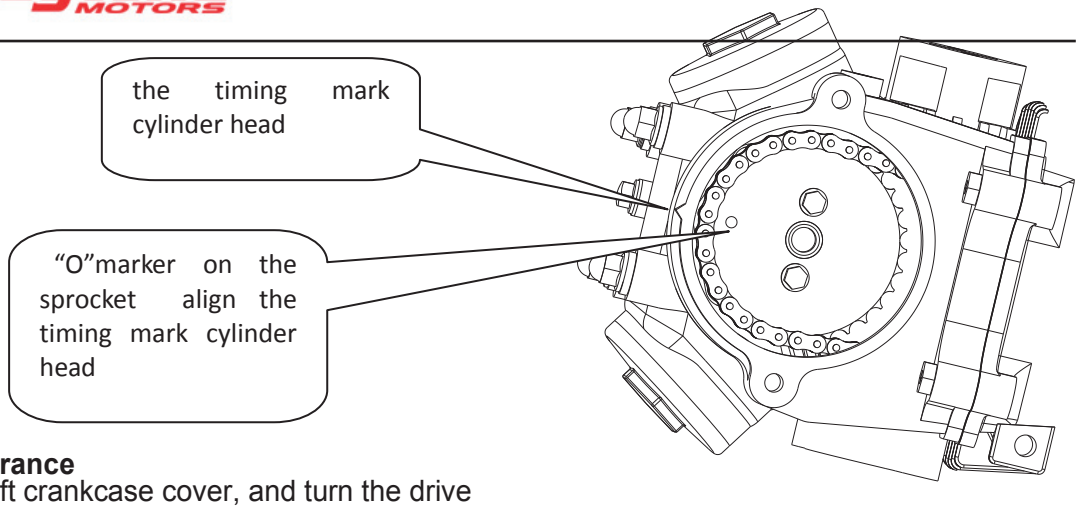
Valve guide
Caution
Before measuring the valve guide, clean carbon deposits with reamer.
Tool: 5.0 mm valve guide reamer



Measure and record each valve guide inner diameters.
Service limit: 5.03 mm
The difference that the inner diameter of valve guide deducts the outer diameter of valve stem is the clearance between the valve stem and valve guide.
Service Limit: IN→0.08 mm
EX→0.10 mm

Caution
If clearance between valve stem and valve guide exceeded service limit, check whether the new clearance that only replaces new valve guide is within service limit or not. If so, replace cylinder head.

Timing



Valve clearance

Remove left crankcase cover, and turn the drive face, and align the timing mark on the cam sprocket with that of cylinder head, piston is at TDC position.

Loosen valve clearance adjustment nuts and bolts located on valve rocker arm.

Measure and adjust valve clearance with feeler gauge.

After valve clearance had been adjusted to standard value, hold adjustment bolt and then tighten the Adjustment nut.

Standard Value: IN 0.05±0.02mm
EX 0.05±0.02mm

Valve clearance

Remove Magneto plug screw and Timing plug screw, and turn the crank and align the timing mark on the cam sprocket with that of cylinder head, piston is at TDC position.

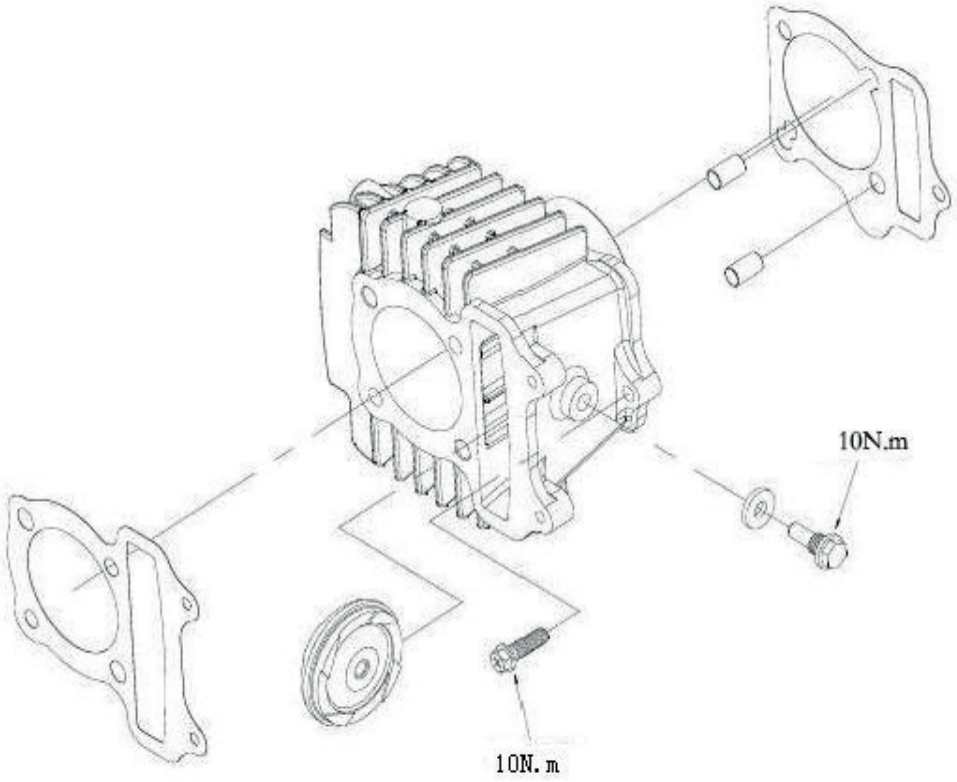
Loosen valve clearance adjustment nuts and bolts located on valve rocker arm.

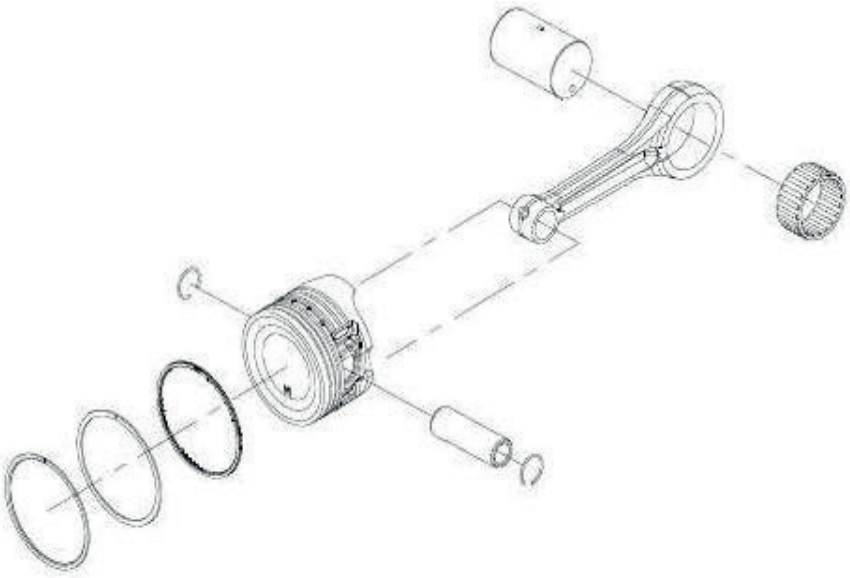
Measure and adjust valve clearance with feeler Gauge.

After valve clearance had been adjusted to standard value, hold adjustment bolt and then tighten the Adjustment nut.

Standard Value: IN 0.05±0.02mm
EX 0.05±0.02mm

Mechanism Diagram





7. Cylinder / Piston

Precautions in Operation

General Information

Both cylinder and piston service cannot be carried out when engine mounted on frame.

Specification **Unit：mm**

			DY/Sprinter 125	
Item			Standard	Limit
Cylinder	I.D.		52.405~52.415	52.45
	Out of round		-	0.10
	Taper		-	0.10
	Warpage		-	0.05
Piston/ Piston ring	Clearance between piston ring and ring groove	Top	0.020~0.055	0.12
		2nd	0.020~0.055	0.12
	Piston ring end gap	Top	0.100~0.250	0.50
		2nd	0.150~0.300	0.55
		Oil (side rail)	0.200~0.700	-
	Piston O.D.		52.370~52.390	52.30
	Clearance between piston and cylinder		0.015~0.045	0.15
	ID of piston pin boss		13.002~13.008	13.055
Piston pin O.D.			12.994~13.000	12.98
Clearance between piston and piston pin			0.002~0.014	0.075
Connecting rod small end I.D.			13.016~13.034	13.10

Troubleshooting

Low or Unstable Compression Pressure

Cylinder or piston ring worn out

Smoking in Exhaust Pipe

Piston or piston ring worn out

Piston ring installation improperly

Cylinder or piston damage

Knock or Noise

Cylinder or piston ring worn out

Carbon deposits on cylinder head top-side

Piston pin hole and piston pin wear out

Engine Overheat

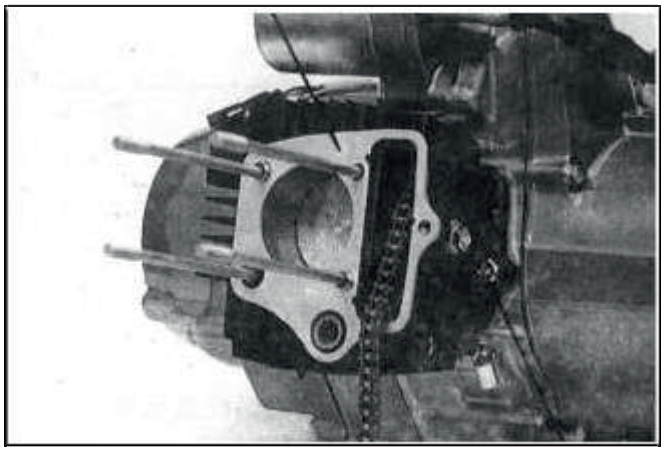
Carbon deposits on cylinder head top side

Cylinder / Piston Removal

Remove cylinder head (refer to chapter 6).

Take down guide roller pivort and guide rollor.

Take down 6mm bolt



Cover the holes of crankcase and cam chain with a piece of cloth.

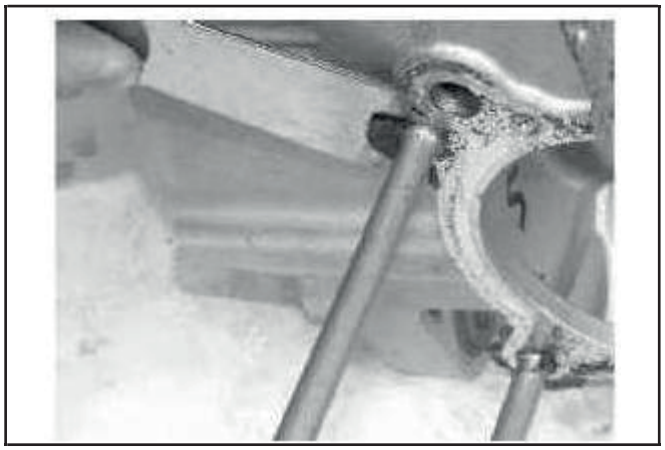
Remove piston pin clip, and then remove piston pin and piston.

Remove cylinder gasket and dowel pin.

Clean up all residues or foreign materials from the two matching surfaces of cylinder and crankcase.

Caution

Soap the residues into solvent so that the residues can be removed more easily.

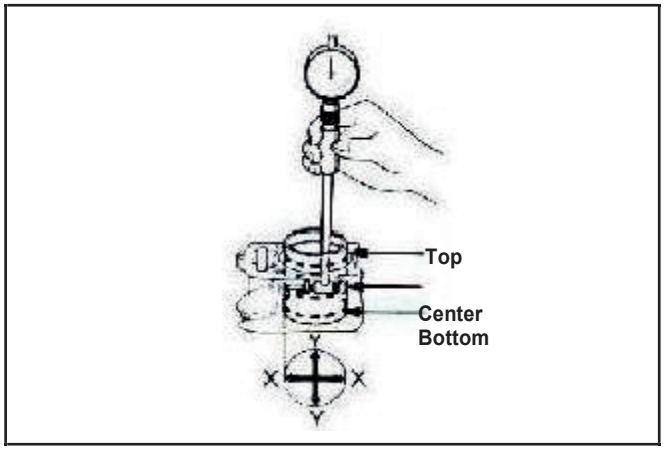


Inspection

Check if the inner diameter of cylinder is wear out or damaged.

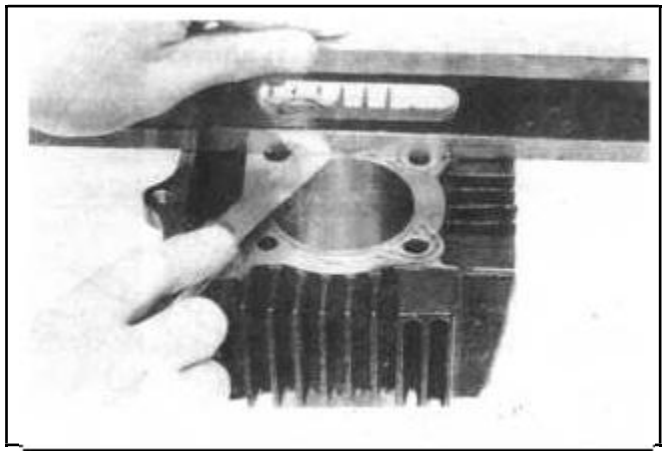
In the 3 positions, top, center and bottom, of cylinder, measure the X and Y values respective in the cylinder.

Service limit : 52.450 mm

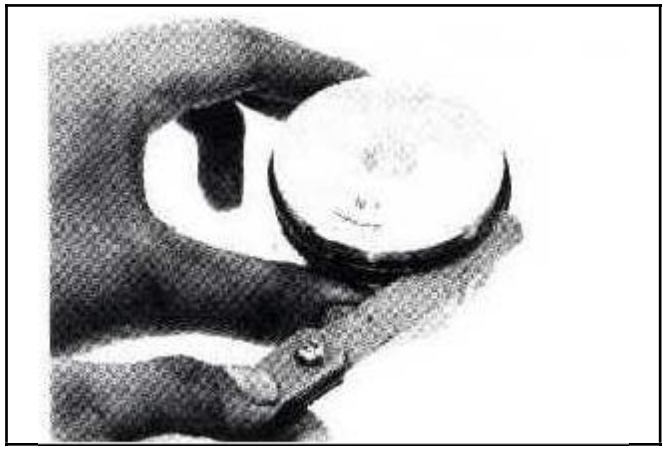


7. Cylinder / Piston

Measure the cylinder upper surface for warpage.
Service limit: 0.050 mm



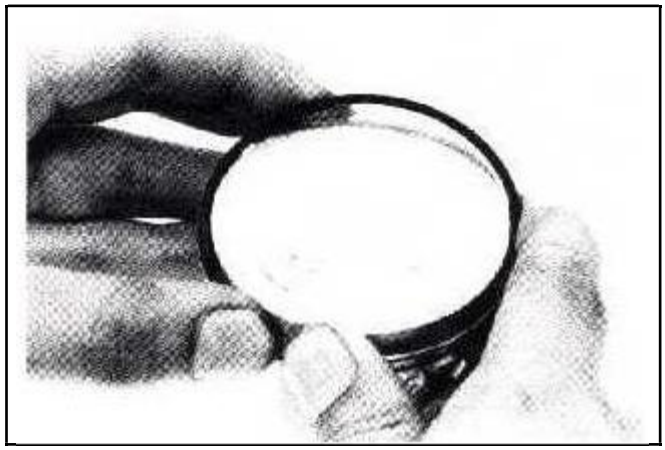
Measure the clearance between piston rings and ring grooves.
Service Limit: Top ring: 0.120 mm
2nd ring: 0.120 mm



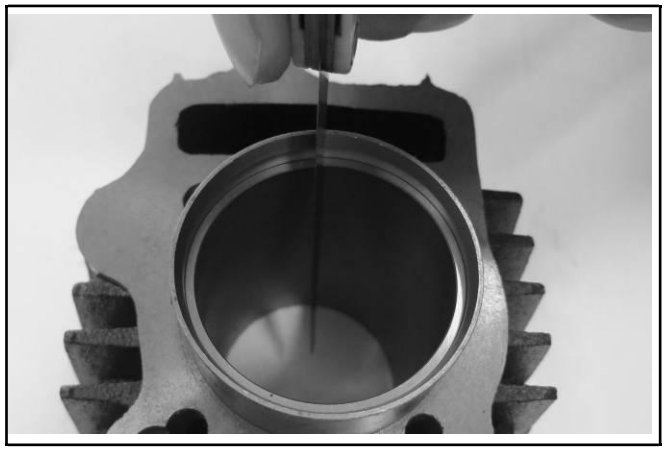
Remove piston rings
Check if the piston rings are damaged or its grooves are worn.

Caution

Pay attention to remove piston rings because they are fragile.



Place piston rings respective into cylinder below 20 mm of cylinder top. In order to keep the piston rings in horizontal level in cylinder, push the rings with piston.
Measure the piston ring end gap.
Service Limit: Top ring: 0.500 mm
2nd ring: 0.550 mm

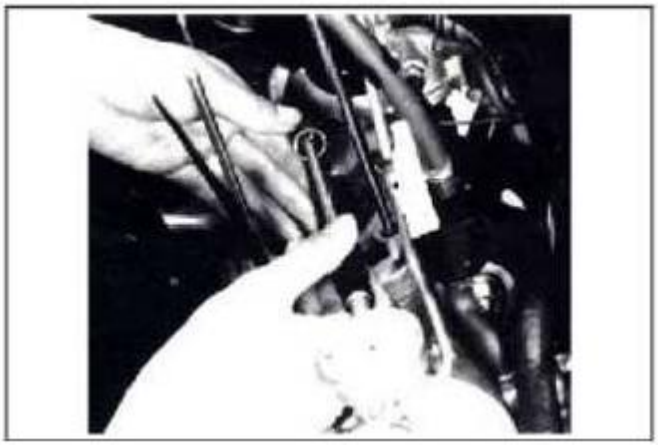


Measure the outer diameter of piston pin.

Service Limit : 12.980 mm

Measure the inner diameter of connecting rod small end.

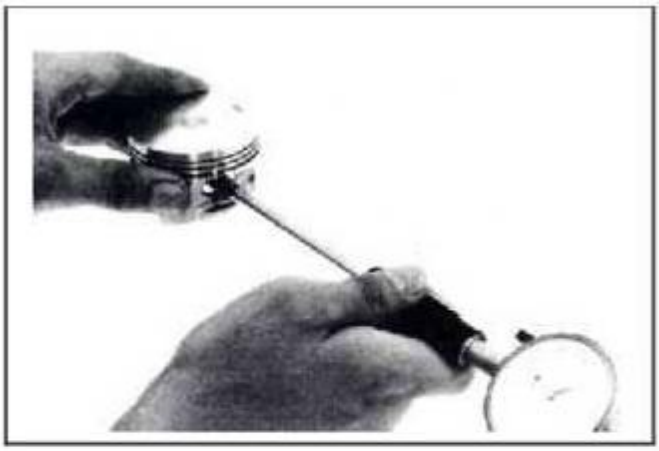
Service Limit : 13.10 mm



Measure the inner diameter of piston pin hole.
Service Limit : 13.055 mm

Calculate clearance between piston pin and its hole.

Service Limit: 0.075 mm



Measure the piston outer diameter.

Caution

The measurement position is 11 mm distance from piston bottom side, and 90°to piston pin.

Service limit：52.300 mm

Compare measured value with service limit to calculate the clearance between piston and cylinder.

Piston Ring Installation

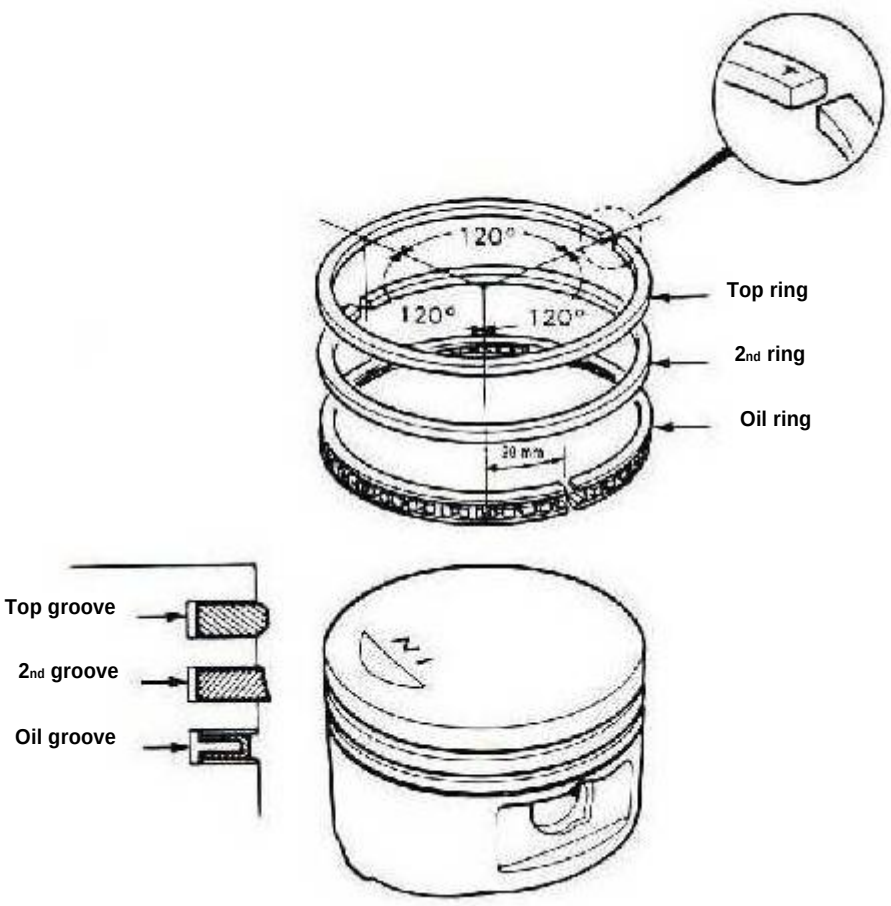
Clean up piston top, ring groove, and piston surface.

Install the piston ring onto piston carefully.

Place the openings of piston ring as diagram shown.

Caution

Do not damage piston and piston rings as installation.
All marks on the piston rings must be forwarded to up side.
Make sure that all piston rings can be rotated freely after installed.



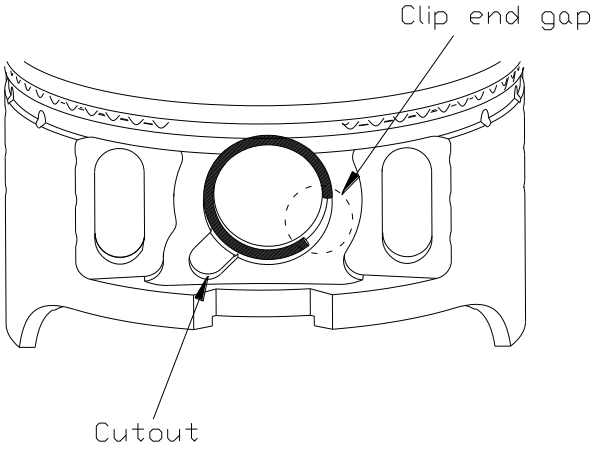
Piston Installation

Install piston and piston pin, and place the IN marks on the piston top side forward to inlet valve.

Install new piston pin clip.

Caution

Do not let the opening of piston pin clip align with the piston cutout.
Place a piece of cloth between piston and crankcase in order to prevent snap ring from falling into crankcase as operation.



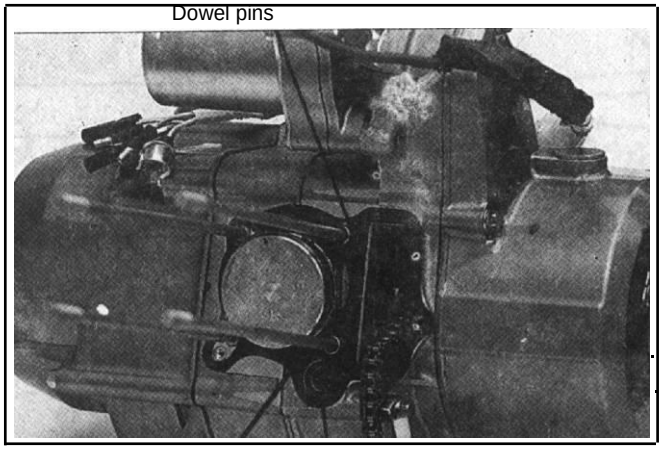
Cylinder Installation

Clean up all residues and foreign materials on the matching surface of crankcase. Pay attention to not let these residues and foreign materials fall into crankcase.

Caution

Soap the residues into solvent so that the residues can be removed more easily.

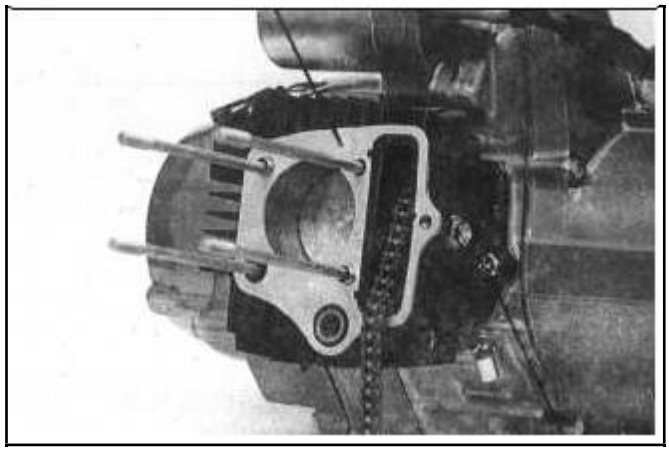
Install dowel pins and new cylinder gasket.



7. Cylinder / Piston

Coat some engine oil to inside of cylinder, piston and piston rings.

Care to be taken when installing piston into cylinder. Press piston rings in one by one as installation.



Caution

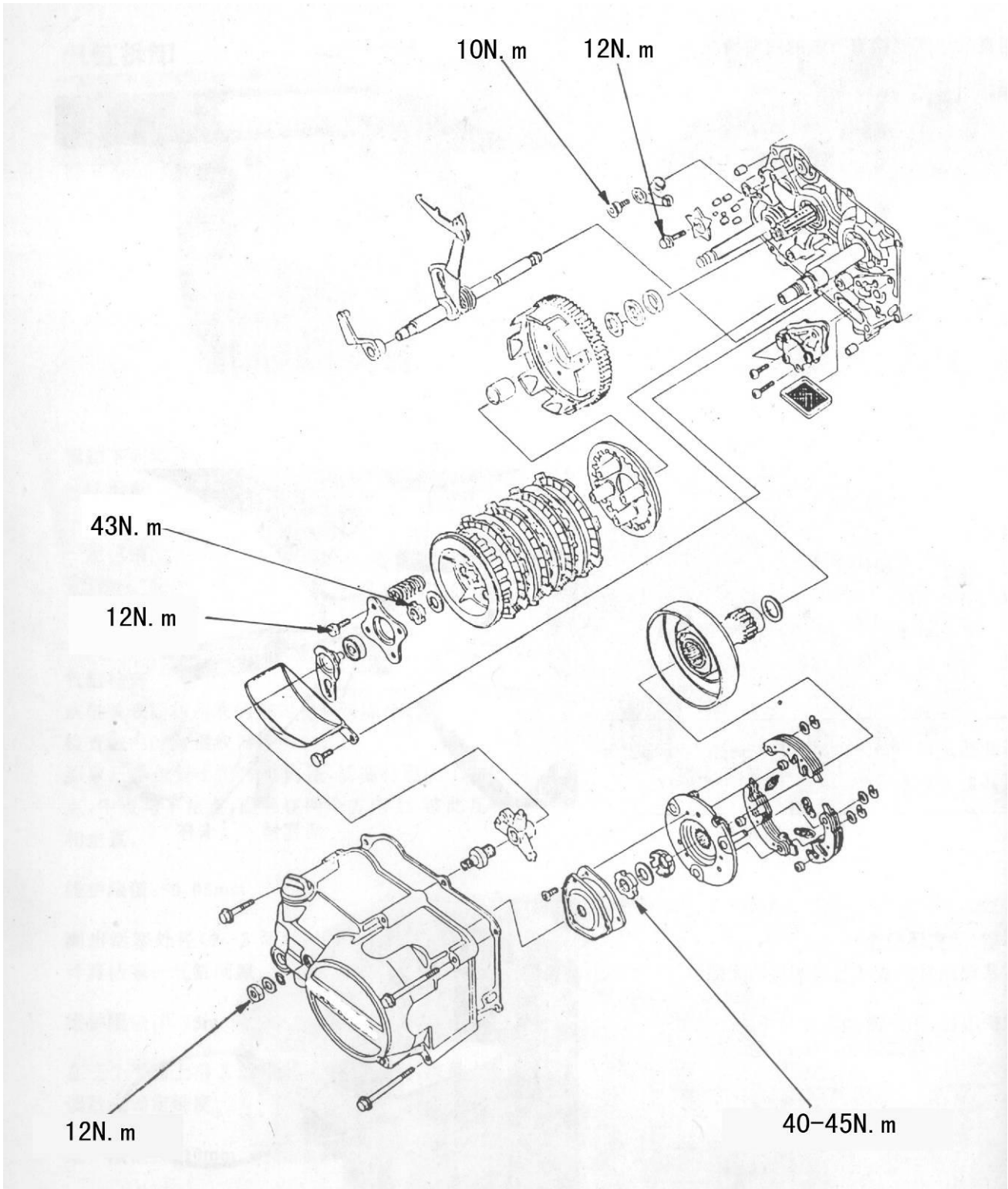
Do not push piston into cylinder forcefully because piston and piston rings will be damaged.

Amount 6mm bolt

Amount guide roller pivort and guide rollor.

Install cylinder head (refer to Chapter 6).

NOTE:


10N. m
12N. m
43N. m
12N. m
12N. m
40-45N. m

8. Clutch/ Gear Shift Mechanism

Maintain knowledge

In general

- Clutch maintenance you can proceed in engine fouling in frame.
- The viscosity of the transmission oil and the oil level will affect the clutch release, when the clutch is off or when the clutch is disengaged slowly, first check the gearbox oil level, and then maintain the clutch system.

Maintenance Data

Item		Standard Value	Maintenance Limit Value
Friction Clutch	Spring Free Length	26.9	25.5
	Friction Plate Thickness	2.9-3.0	2.6
	Slab Warping		0.2
	External Diameter of Clutch Housing Bush	20.959-20.980	20.91
	Internal Diameter Of Clutch Housing	21.020-21.041	21.09
Primary Clutch	Internal Diameter of Primary Clutch Housing	104.0-104.2	104.3
	Clutch Shoe Lining Thickness	1.5	1
	Internal Diameter of Primary Drive Gear Comp.	42-42.02	42.04
	External Diameter of Overrunning Clutch Roller	5.0	4.97
	Internal Diameter of Primary Drive Gear	19.030-19.059	19.11
	External Diameter of Primary Drive Gear Crankshaft	18.967-18.980	18.92

Trouble Finding

Clutch

When the engine is idling, motorcycle running slowly.

- Wrong clutch adjustment
- Clutch disc is warpped
- The clutch lock nut is loose
- Too much oil in the crankcase
- High oil viscosity
- The clutch tappet comp. is not installed properly

During accelerating, the clutch slips.

- The clearance of clutch is too small
- Clutch disc is worn
- Clutch spring force is not enough
- Oil mixed with copper or graphite additives

Transmission mechanism

Hard to shift

- The gear shift arm is broken
- The guard and pin is broken
- The guard bolt gets loose
- Wrong adjustment of clutch clearance

Gear Dislocation

- The gear shift arm is broken
- The guard and pin is broken
- The guard bolt gets loose

Right crankcase cover disassembly

Remove below parts：

——LEG SHELD

——BAR COMP. STEP ASSY WITH SIDE STAND

——KICK STARTER ARM

Remove below parts：

——BOLT, COVER, R. CRANKCASE

——CLIP,COIL,IGNITION

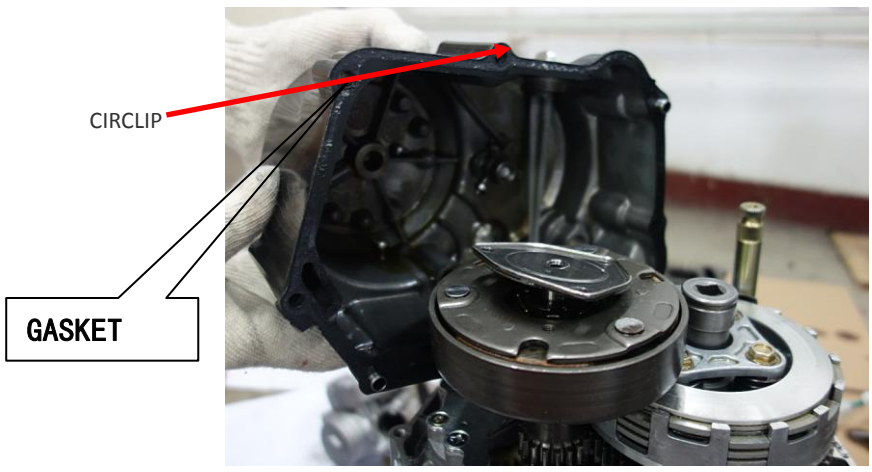
——COVER, R. CRANKCASE

——GASKET

——PIN

Mount Right crankcase cover

Mount pin and new gasket



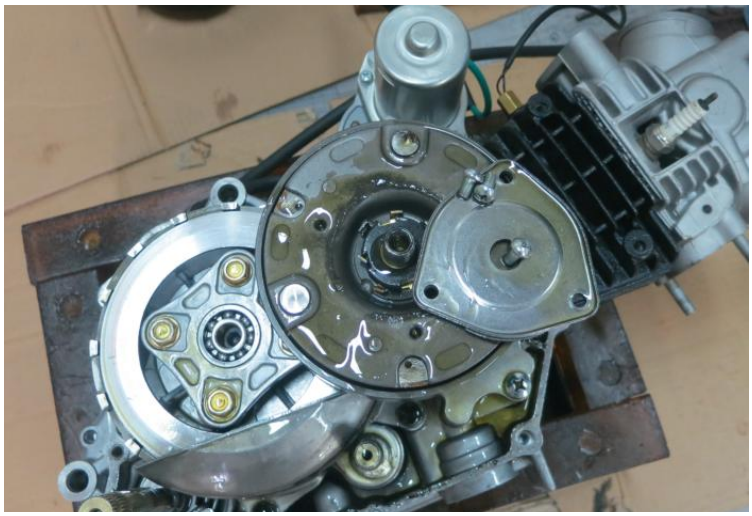
Mount right crankcase cover.
Mount right crankcase cover bolt.
Fasten bolt.
Mount kick starter rod and foot lever.
Fill the oil.
Adjust the clutch.

Clutch

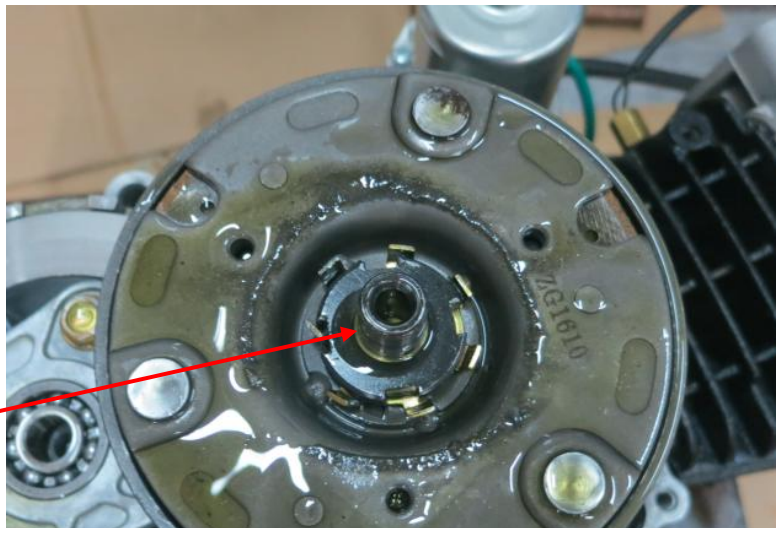
Remove

Take down clutch operating arm, and then remove clutch cam plate。

Remove the three screws, and then remove the oil filter rotor cover and gasket.。



Lift up the thrust connector of locking washer.



Use the special tool removes the centrifugal clutch lock nut.

Remove bolt and clutch plate oil separator.
Remove clutch bearing.

Loosen and remove the clutch locking nut (with special tools)

Remove below parts：

——CLUTCH BUSH

——LOCKING WASHER

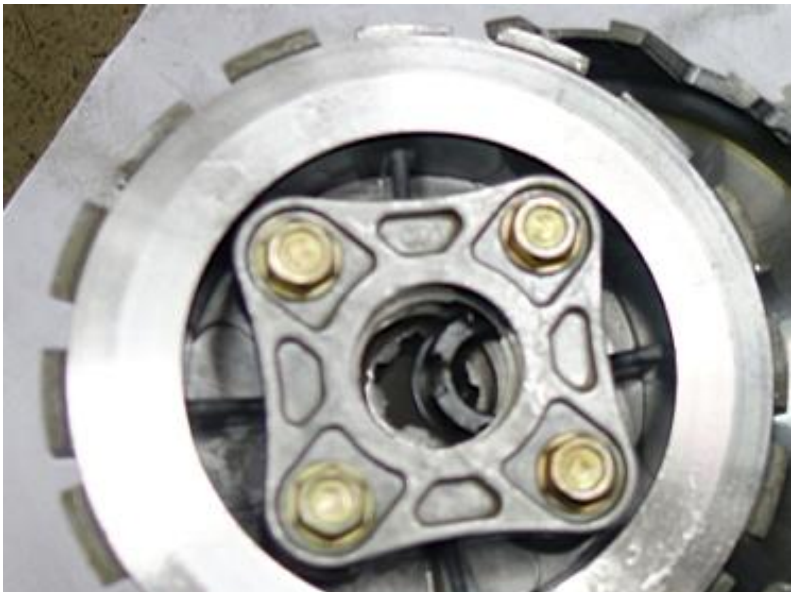
——WASHER SPLINE

——BUSH

——THRUST WASHER

Clutch decomposition

Using dismantling tools remove clutch end cover bolt.



Remove below parts：

——END COVER

——CLUTCH SPRING

——LOCKING WASHER

——CLUTCH DRIVE PLATE

——CLUTCH FRICTION DISK

——PLATE,CLUTCH

Check

Oneway clutch

Remove below parts:

——CIRCLIP,ELASTIC

——WASHER

——CLUTCH ROLLER

——SPRING

——CLUTCH INNER BODY

Check the worn or damaged parts of the removed parts.

Lubricate each part with the recommended oil.

OUTER ASSY. PRIMARY CLUTCH

Internal Diameter of CLUTCH OUTER ASSY.

Maintenance limit：φ **42.04mm**

Oneway clutch roller

Measure the external diameter of oneway clutch roller

Maintenance limit：φ **4.97mm**

Crankshaft

Measure the external diameter of the crankshaft at the primary drive gear.

Maintenance limit：φ **18.92mm**

Measure the internal diameter of drive gear.

Maintenance limit：φ **19.11mm**

Clutch Shoe

Measure the thickness of clutch shoe friction marterial.

Maintenance limit：**1.0mm**

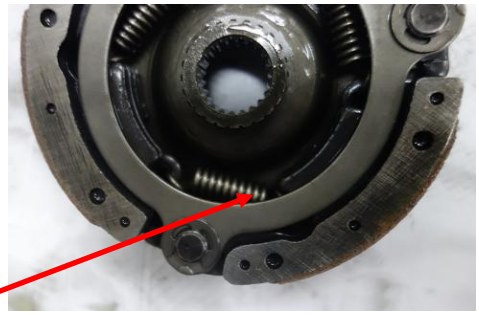
Over the limit please replace the clutch shoe.

Remove shock absorber rubber and replace clutch shoe.

Clutch Spring

Measure the free length of three clutch spring.

Maintenance limit：**25.5mm**



Clutch

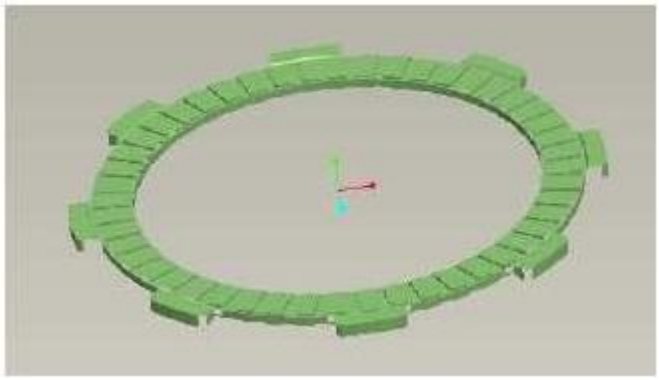
Check the damage level of the clutch drive plate，the damage caused by clutch friction disk.

If necessary, please replace it.

Clutch Friction Disk

If there are signs of clutch friction disk strained and faded, please measure the thick of clutch friction disk.

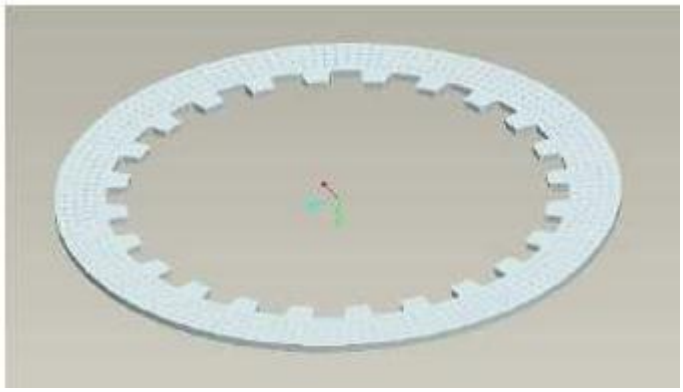
Maintenance limit：**2.8mm**



Clutch Plate

Check the clutch plate, in the disk with a feeler to see whether the disc warpage .

Maintenance limit：**1.5mm**



Clutch Drive Plate Bush

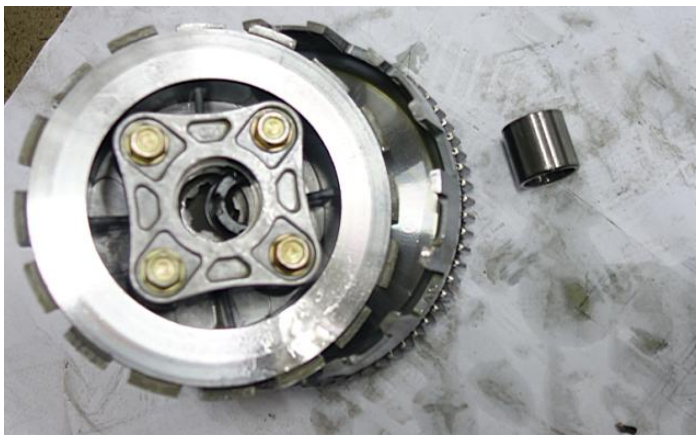
Check the internal hole of clutch driving disc is damaged or not and the degree of wear, it caused by clutch friction disk, if necessary please replace the clutch driving disc.

Measure the internal diameter of the clutch drive plate.

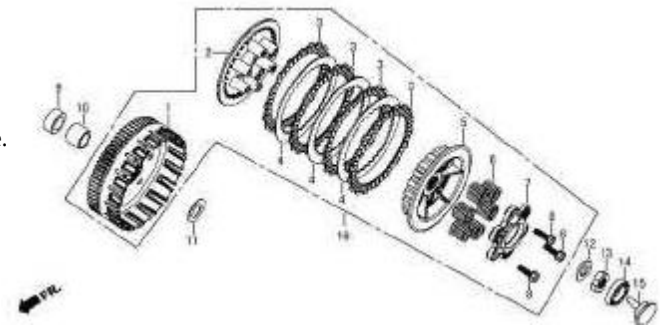
Maintenance limit：**φ 21.09mm**

Measure the external diameter of the clutch drive plate bush。

Maintenance limit：**φ 20.91mm**



Installation



Note:

Add the new engine oil on the clutch friction disk and clutch plate.

Mount below parts:

——CLUTCH FRICTION DISK

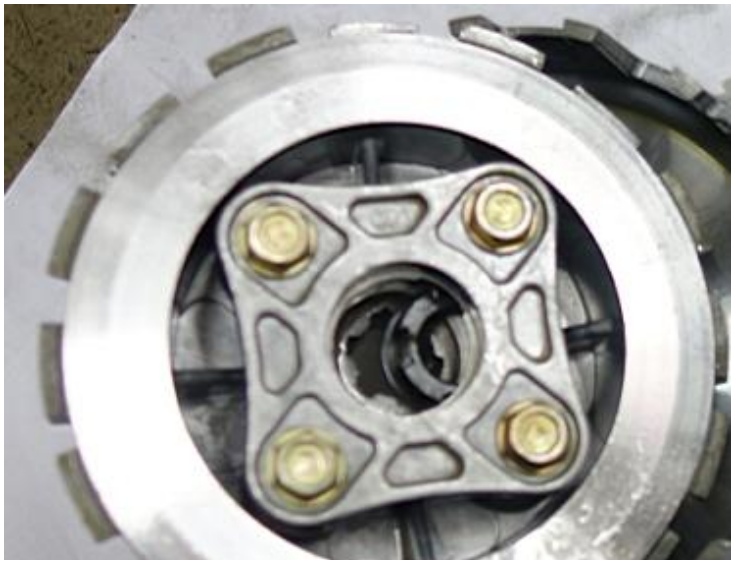
——CLUTCH DRIVE PLATE

——LOCKING WASHER

——CLUTCH SPRING

——END COVER

Clamp the clutch drive plate with special tools, mount and tighten the clutch cover and bolts.



Torque：**12 N • m**

Installation

Install the bush, washer spline and locking washer on to main shaft.

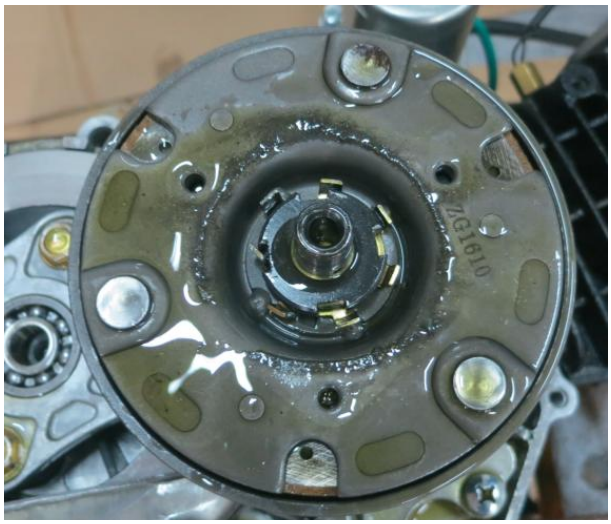
Install friction clutch, clutch oil separater plate and primary clutch.

Install the locking washer,
make the “OUT” mark side outward.

Install friction clutch locking nut with Special tools, and then mount the clutch bearing.

Torque：43N • m

Install drive plate/clutch shoes。
Mount new locking washer, correct the thrust connector with the drive plate notch.
Install the thrust washer,
make the “OUT” mark side outward.



Fastening primary clutch locking nut with special tools,
Torque：40—45N • m

Install new primary clutch gasket and primary clutch cover。
Mount three screw and firmly fasten.

Install clutch cam plate and operating arm comp.
Correct the operating arm comp. with press mark of shaft,
And then mount the gear shift shaft.

Transmission mechanism Remove

（it should remove engine）

Remove below parts：

——RIGHT CRANKCASE COVER

——CLUTCH COMP.

Take down bolt and limit plate

Note:

✶ *Clean the end of the gear shaft to prevent dust from being taken into crank shaft.*

Loosen clamping jaw and pull out gear shaft from the crankcase.

Gear Shift Mechanism

After removing gear hub, withdraw gear hub guard, pin, location pin。

Check

Check the damage /wear degree of the gear arm and the reset spring.

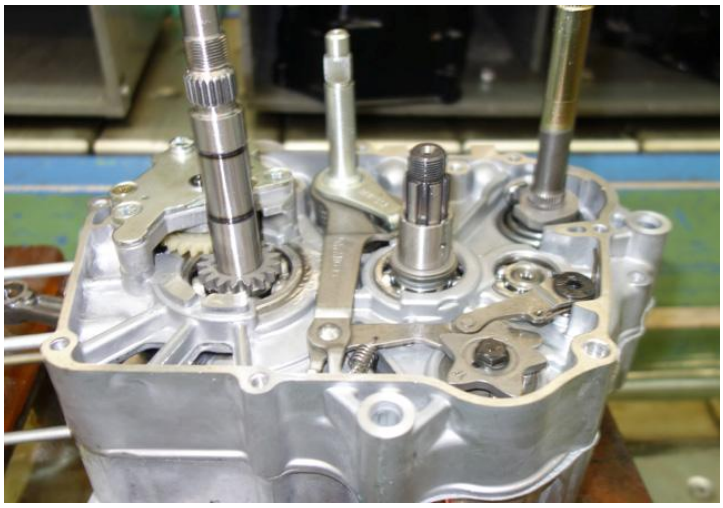
Installation

Install the location pin and pin on the gear hub.
Install the guard and correct guard hole with pin.
Install the guard bolt, and tighten to the specified torque value.

Torque：12N • m

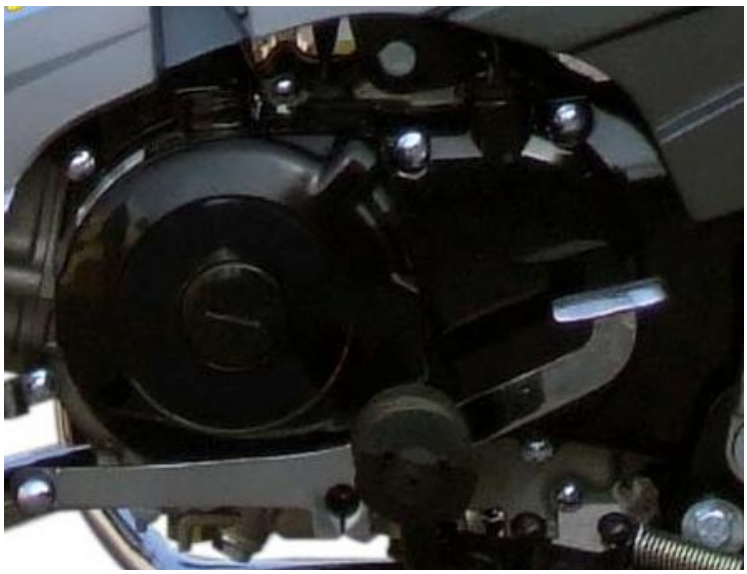
Install the gear shift shaft, correct reset spring with location bolt as right photo.

Install the gear arm and reset spring location bolt.



Tighten bolt to the specified torque value.

Torque：10N • m。

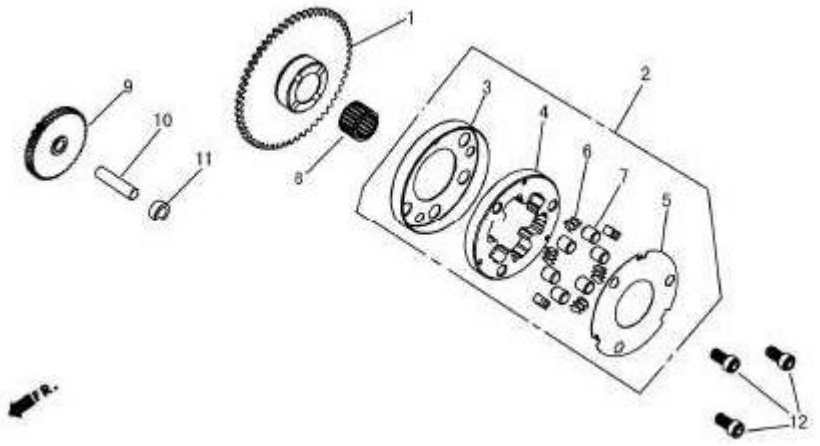


Mount gear shift pedal, and confirm gear shift mechanism running normal.

Mount below parts：

——Clutch Comp.

——Right Crankcase Cover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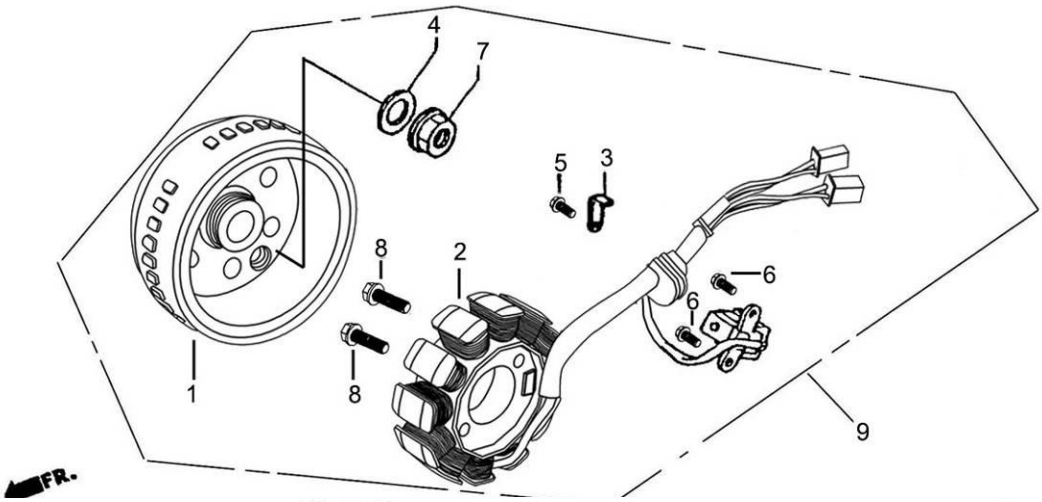
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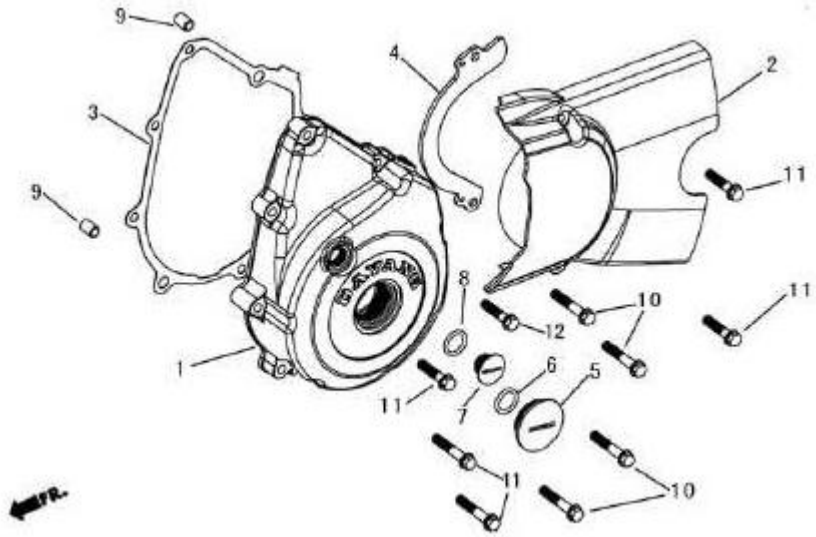
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9. Magneto/Starting Clutch

Maintenance

Overview

- Check the magneto according to 13 section

Maintenance Data

Item	Standard Value	Maintenance Limit Value
Starting sprocket external diameter		42.275

Torque Value

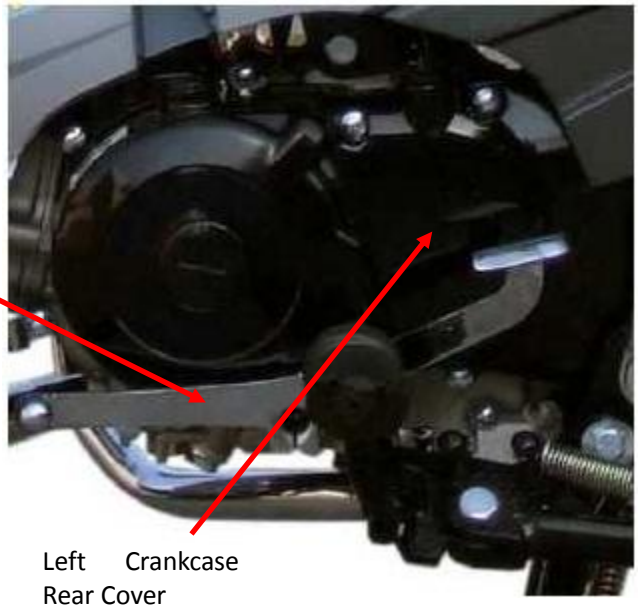
Flywheel Nut	40—45N·m
Starting Clutch inner hex bolts	10—14N·m

Left Crankcase Front Cover

Remove

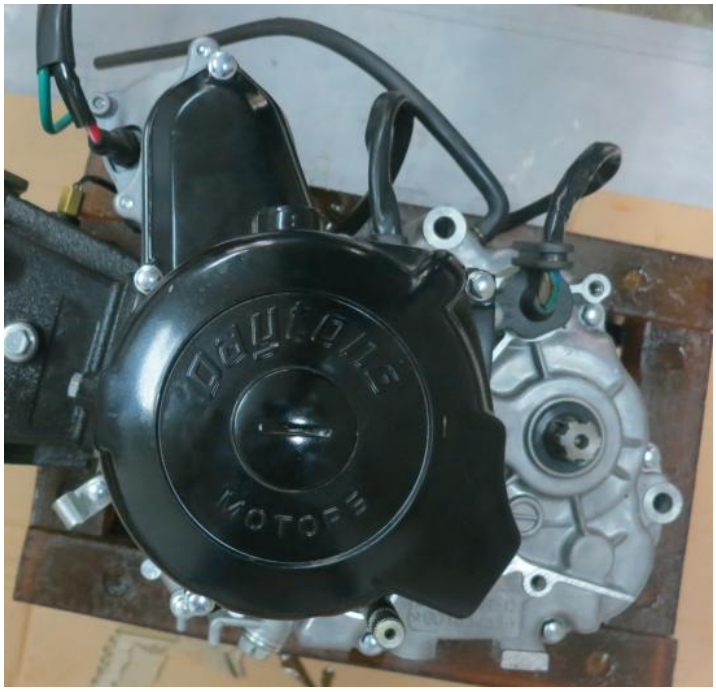
Remove bolt and gear shift pedal.

Remove left crankcase rear cover.



Remove magneto connector.

Remove left front cover**(M6** bolt**×4)**。



Remove location pin and gasket.

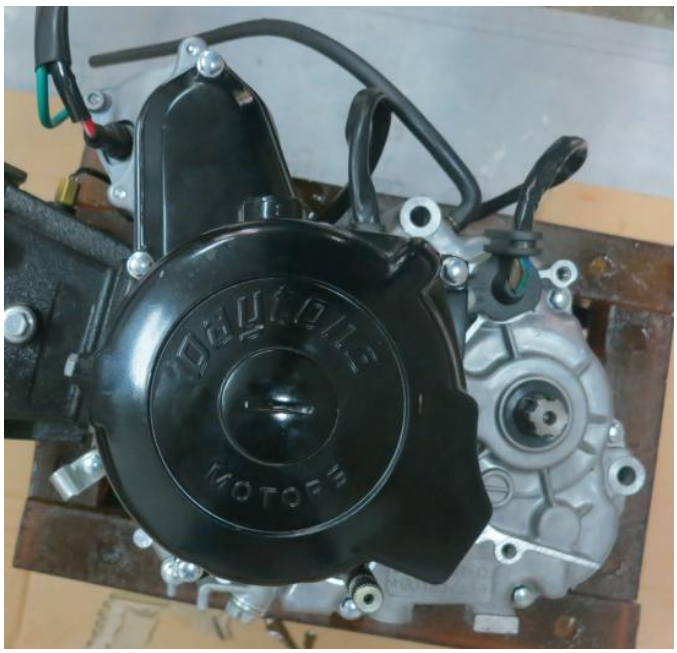
Installation

Clean up the gasket debris and foreign bodies between crankcase cover and the crankcase joining interface.

Caution

The joining interface cannot be damaged.

Mount the location pin and new gasket.



Mount left crankcase front cover.

Mount and tighten the bolt.

Connect the magneto cable connector.

Mount left crankcase rear cover.

Mount and tighten screw.

Mount the gear shift pedal.

Mount and tighten gear shift pedal screw.

Magneto Stator

Remove

Remove left crankcase front cover（9-2 page）

Remove speed sensor bolt, and take down magneto cable from left crankcase front cover.

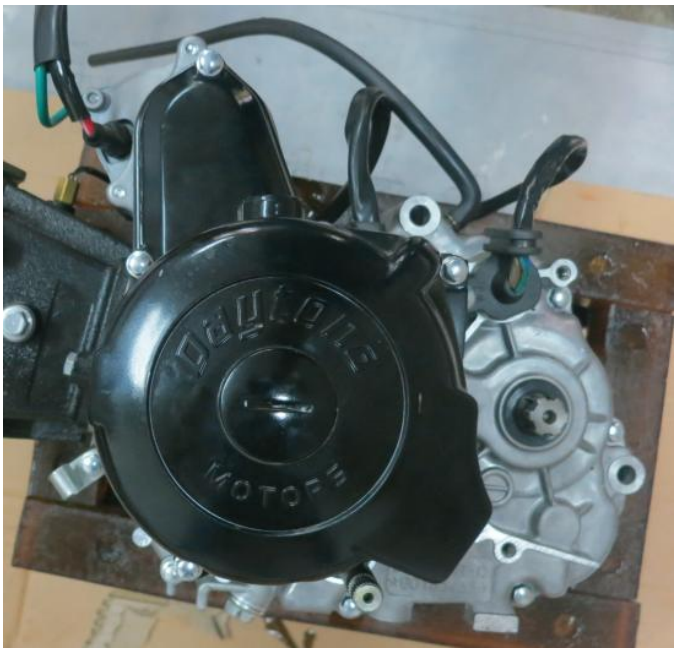
Remove magneto stator bolt.

Take down magneto stator from left cover.

Installation

Mount the magneto stator into left crankcase front cover.

Mount and tighten the screw.



The magneto cable fixing rubber seal by spreading the rubber and clip into left crankcase front cover.

Mount magneto stator.

Mount and tighten bolt.

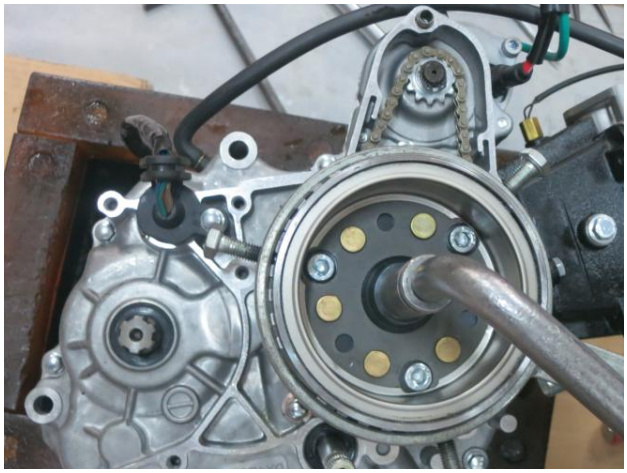
Mount the left crankcase front cover.（9-4 page）

Magneto/Starting Clutch

Remove

Remove lefrt crankcase front cover.（9-3 page）

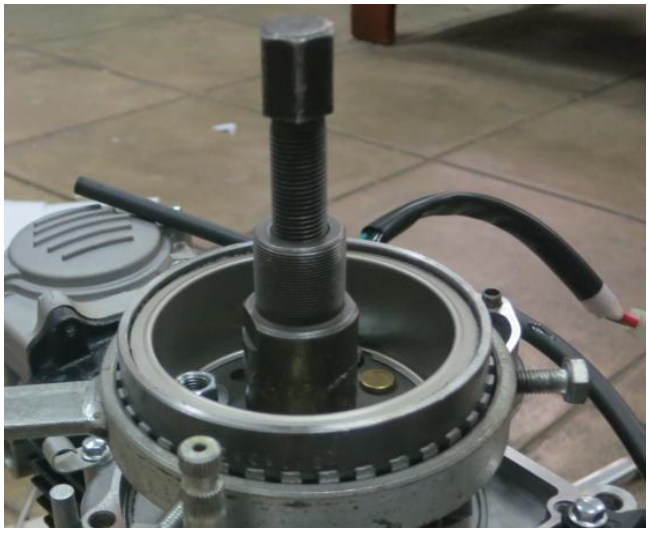
Remove magneto nut and shim.



Special Tools

Universal Clamp

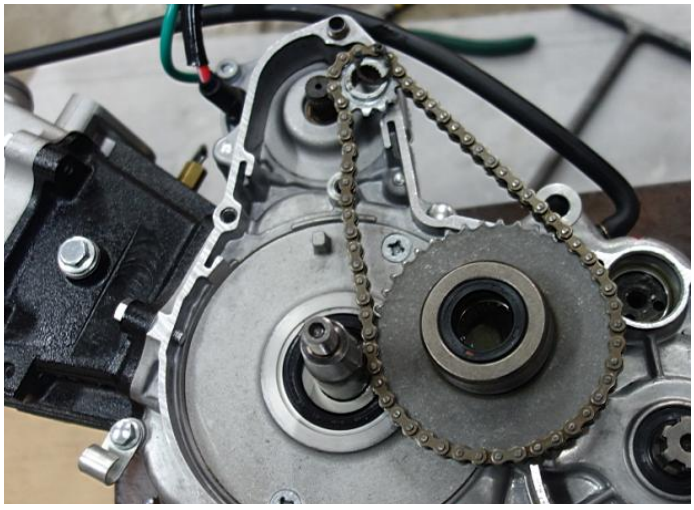
Remove magneto by
magneto puller



Special Tools

magneto puller

Remove the starting sprocket (closing) ring。
Take down starting sprocket comp.。



Starting clutch comp.

Remove flywheel/starting clutch（9-7 page）。

Turn the starting gear towards the clutch and check whether the start gear is wore or broken.

Starting gear should be turned clockwise and can not be turned clockwise.

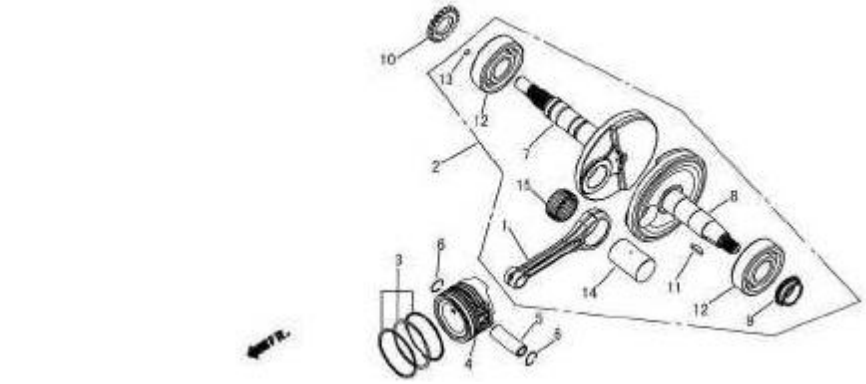
Turn the starter gear counter clockwise and remove the gear from the flywheel / starter clutch comp.

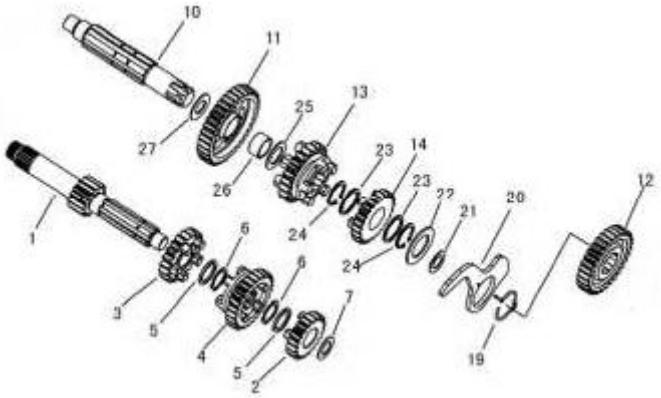
Clamp the magneto with the universal clamp and remove the fastening bolts of the starter clutch.

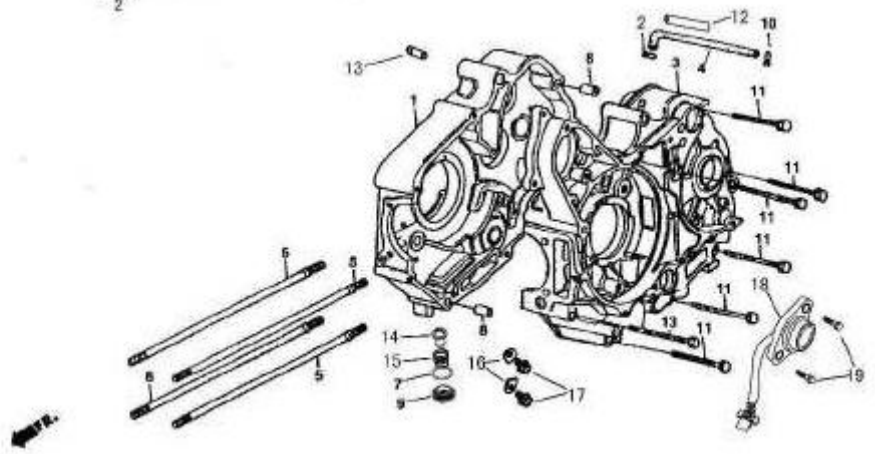
Tools

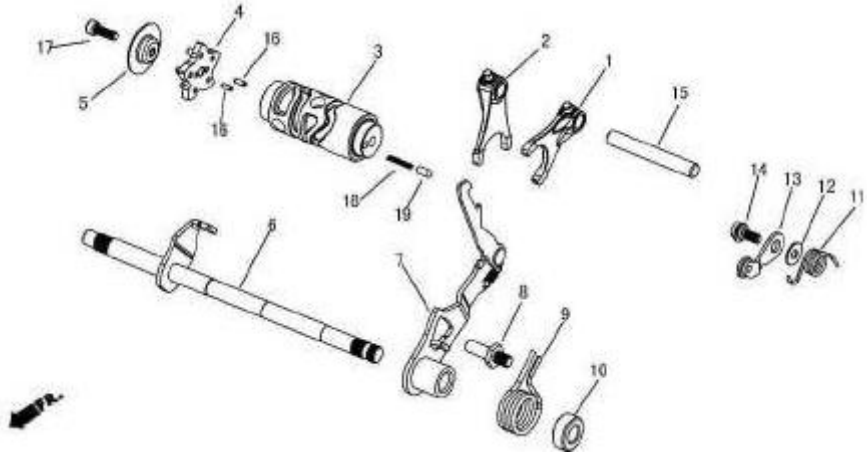
Universal Clamp

Remove starting clutch comp.









10. Transmission Mechanism/Crankcase/Kick Starter

Maintenance

Overview

- The crankcase must be opened to protect the crankshaft, transmission mechanism, and kick start mechanism.
- Break the crankcase and remove below parts:

——Engine（5 chapter）

——Cylinder head/air valve（6 chapter）

——Cylinder head/piston（7 chapter）

——Clutch/Gear mechanism（8 chapter）

——Magneto/start clutch（9 chapter）

——Oil Pump（2 chapter）

Maintenance Data

Item			Stardard Value	Maintenance Limit Value
Shifting Fork	Internal Diameter		34.075—34.100	34.14
	Pusher Dog Thickness		4.86—4.94	4.60
External Diameter of Gear Drum			33.950—33.975	33.93
Transmission Mechanism	External Diameter of Mainshaft	M2，M4	16.966—16.984	16.95
	External Diameter of countershaft	C1,C3	19.959—19.980	19.94
	Internal Diameter of Gear	M2	17.032—17.059	17.10
		M4	17.016—17.043	17.10
		C1	23.020—23.053	23.10
		C3	20.020—20.053	20.10
	Bush	Internal Diameter	20.000—20.021	20.08
		External Diameter	22.979—23.000	22.93
Crankshaft	The Connecting Rod Tip Radial Clearance		0—0.012	0.05
	The Connecting Rod Tip Lateral Clearance		0.10—0.35	0.6
	Crankshaft Radial Runout			0.1

Touble Finding

Difficult to gear shift

- Clutch clearance is adjust properly
- Shifting fork is out of shape
- Guide pin is broken
- Gear shifting pusher dog abrasion

Transmission gear displacement

- Guide pin abrasion
- Shifting fork is out of shape

Noise is too loud

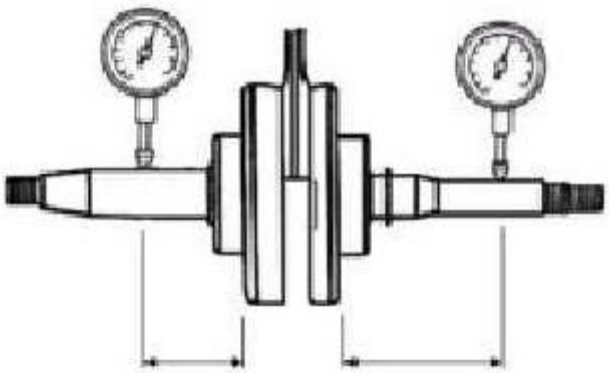
- Crankshaft journal bearing abrasion
- Transmission bearing abrasion

Engine vibration

- Crankshaft radial runout is too big

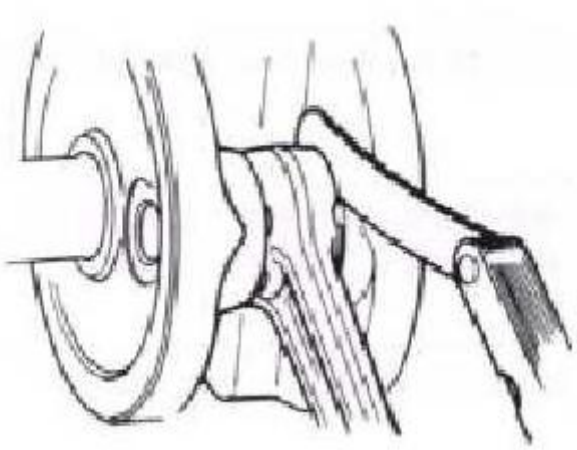
Turn crankshaft bearing outer race with finger.
Bearing ~~should~~ should be able to slide smoothly and turn smoothly.。
Also check that the crankshaft bearing inner race
is securely match to the crankshaft.

Put the crankshaft on the shelf or “V” block, measure radial runout of crankshaft with a dial indicator.
Measure postion see right photo.



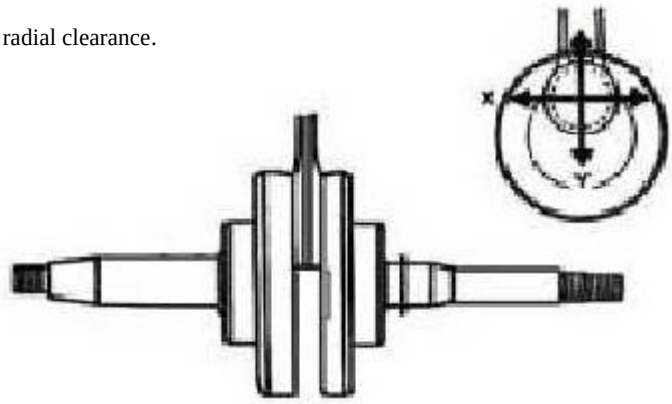
Maintenance limit：**0.1mm**

Measure the connecting rod tip lateral clearance by clearance gauge.



Maintenance limit：**0.6mm**

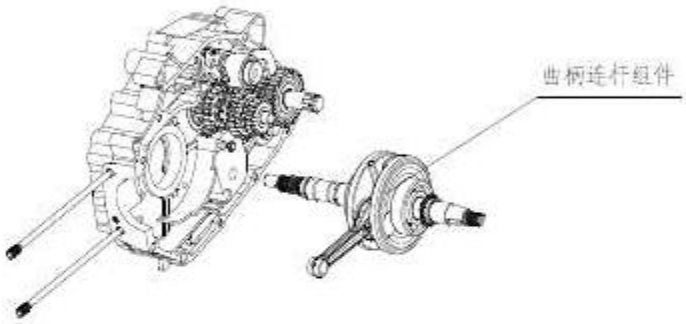
At the symmetric point of right photo measure the connecting rod tip radial clearance.



Maintenance limit：**0.05mm**

Timing drive sprocket replacement.
Carefully check the wear or damage of the timing drive sprocket teeth.
If necessary, remove damaged timing drive sprocket from crankshaft.
Correct center of any two teeth to the keyway on the crankshaft and
press the new sprocket into the crankshaft.
（It is necessary to be noted here that the counter point between the drive sprocket and the crankshaft pressing）

Mount crankshaft into right crankcase.



Kick starter mechanism

Breakdown

Remove kick starter shaft comp.

Remove below parts

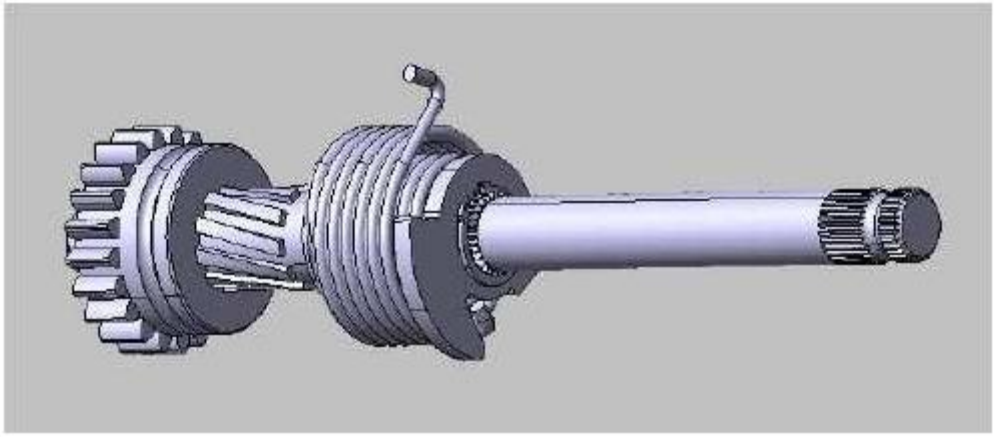
—Thrust Washer，17mm

—Circlip

—Kick Starter Ratchet And Gear, Spring.

—Circlip

—Thrust Washer，20mm



Check the abrasion or damaged condition of gear, kick starter shaft, friction spring and reset spring.

Assemble the kick starter mechanism according to reverse order of disassembly.

The kick starter shaft is mounted by inserting one end of the friction spring into the crankcase notch.

Transmission Mechanism

Disassembly

Remove the kick starter

Remove the main shaft, countershaft and

Gearshift drum

Take out the gearshift grum from changing gear

Comp.

Take out the gear from the main shaft and

Countershaft.

Pull out the pin clip and gearshift fork

Take off the gearshift fork from gearshift drum

Remark

*marked on the left and right fork for the correct mounting.

Inspection of transmission mechanism

Check the wear condition of each tooth, if necessary, please replace it.

Check the wear condition of gear and collar

Measure the inner diameter of each transmitting gear

Measure the inner diameter and outer diameter

Maintain Limited Value：**M2：17.10 mm**

C1：20.10 mm

C3：17.10 mm

C1 Inner Diameter Of Shaft Sleeve：**17.08mm**

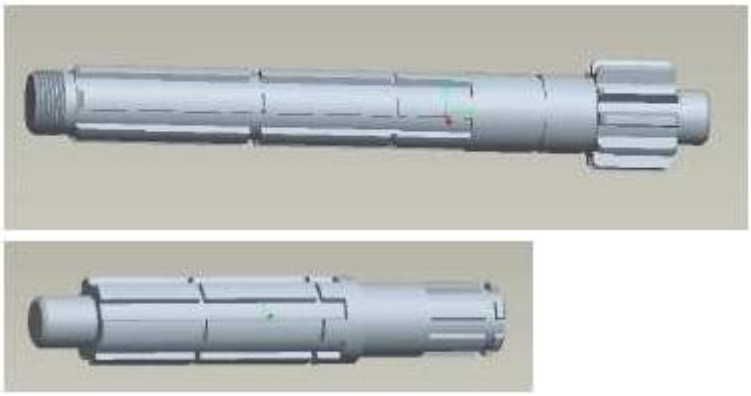
Outer Diameter：**19.93mm**

Check main shaft, countershaft key groove, and wear condition of surface

Maintain Limited Value：

Outer Diameter of Main Shaft：**16.95mm**

Outer Diameter Of Countershaft：**16.94mm**



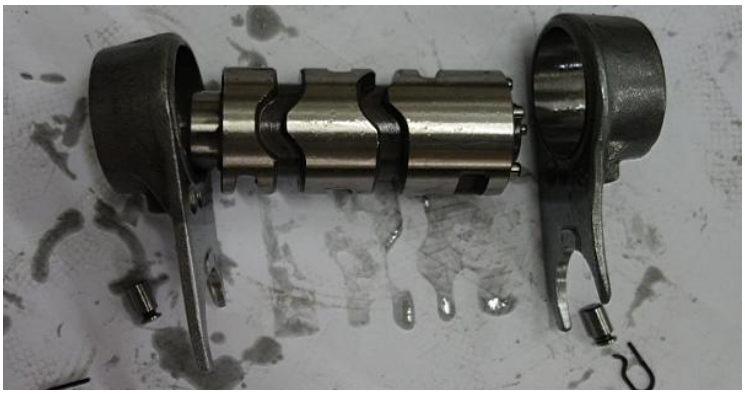
Inspection of gearshift drum

Check the wear condition of gearshift

Drum and guild pin

Measure the outer diameter of gearshift

Maintain Limited Value：**33.93mm**



Measure the inner diameter of gear shift fork

Maintain Limited Value：**34.15mm**

Measure the pusher thickness of gearshift fork

Maintain Limited Value： **4.60mm**

Inspection of drive bearing

Rotate the inner race of bearing by finger

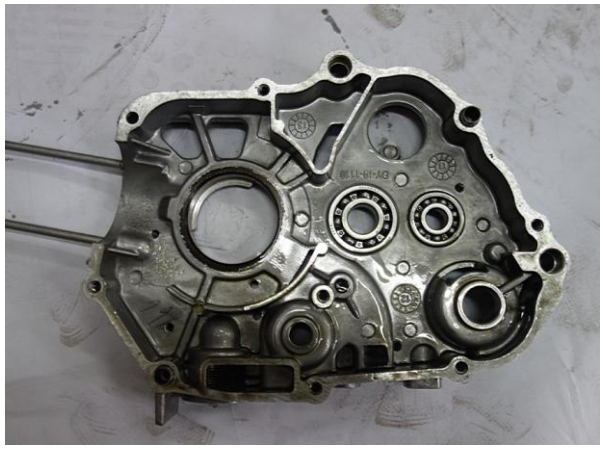
The bearing should rotate smooth and voicelessly.

Check the suitable between bearing outer race and Crankcase

If the bearing rotate not smooth and abnormal noise,

Or the bearing outer race is rotate in crankcase,

Please replace the bearing

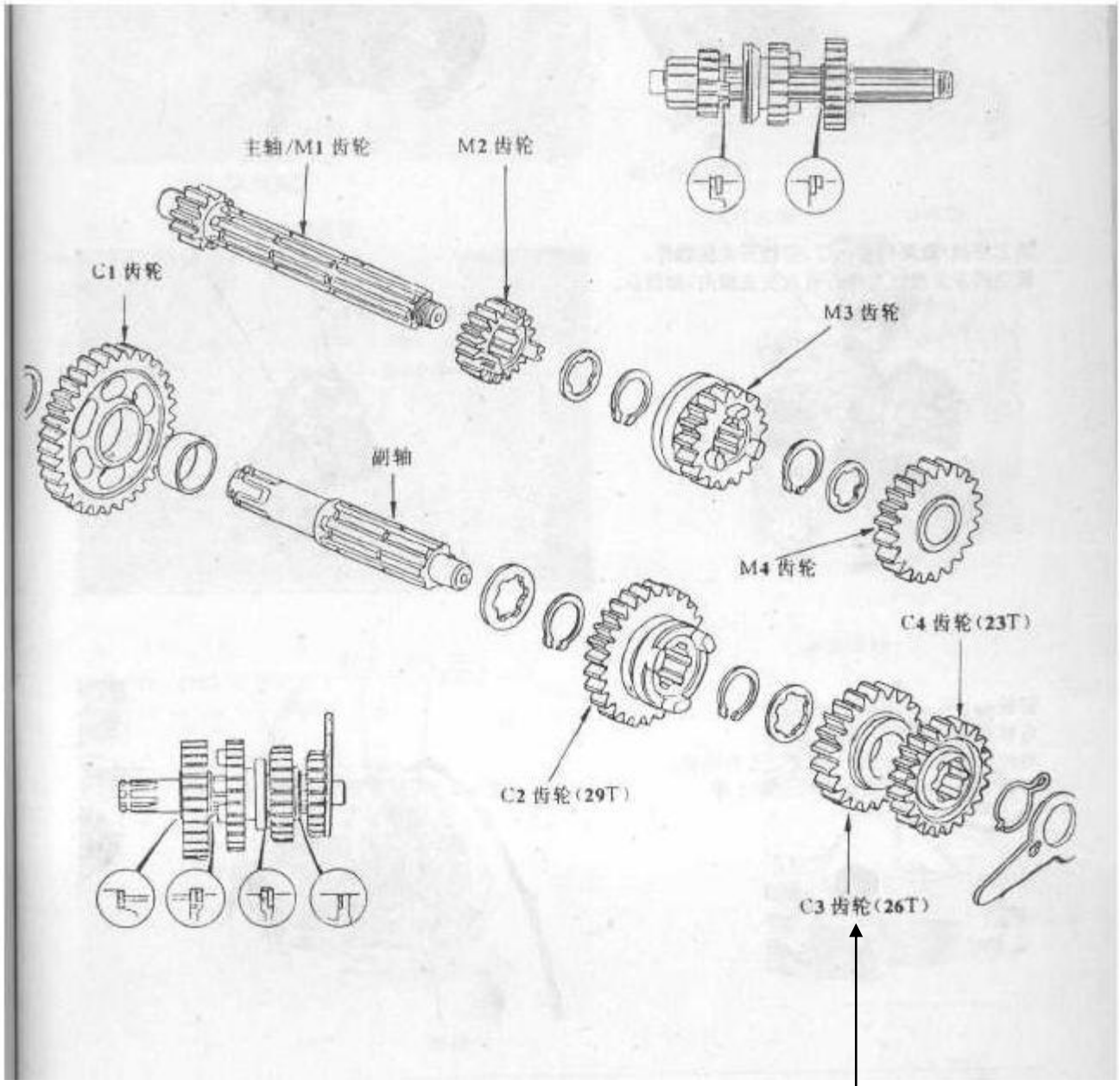


Assembly of transmission mechanism

Repeat the disassembly steps of transmission mechanism, but in reverse order.

Remark

Align the top of circlip at the center of chain groove



Mainshaft M1 gear, M2 gear, M3 gear, M4 gear
C1 gear, countershaft, C2 gear (29T) C3 gear (26T),
C4 gear (23T)

Gearshift Drum

Mount the gear shift fork on the gearshift drum

Mount guide pin and pin clip

Installation

Mount gearshift drum, spindle unit, countershaft comp.

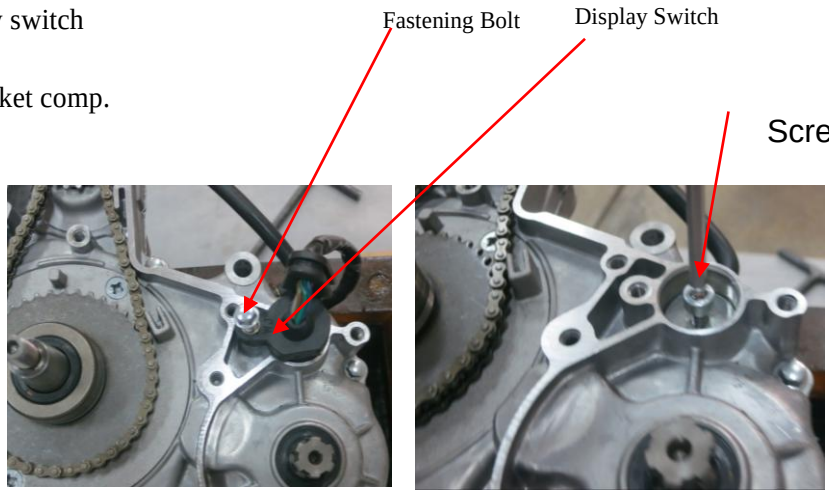
Mount the transmission comp. into left crankcase

Rotate the main shaft, confirm the condition

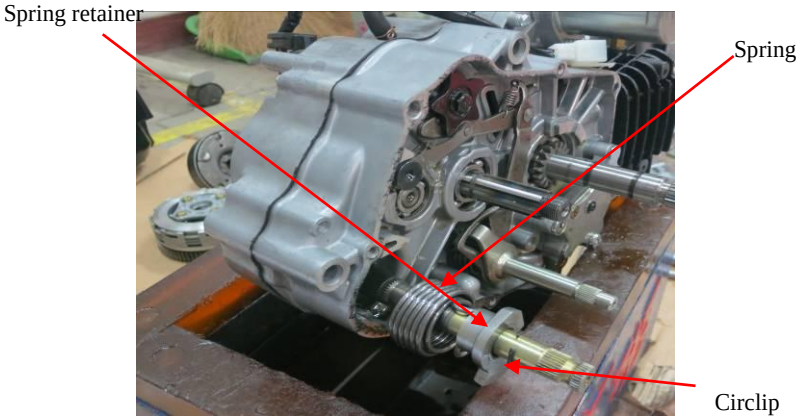
of the transmission mechanism

Disassembly of crankcase

Remove the bolt of display switch
remove the display switch
Remove the screw and gasket comp.



Take out the circlip of kick starter shaft
Take out the spring retainer and spring



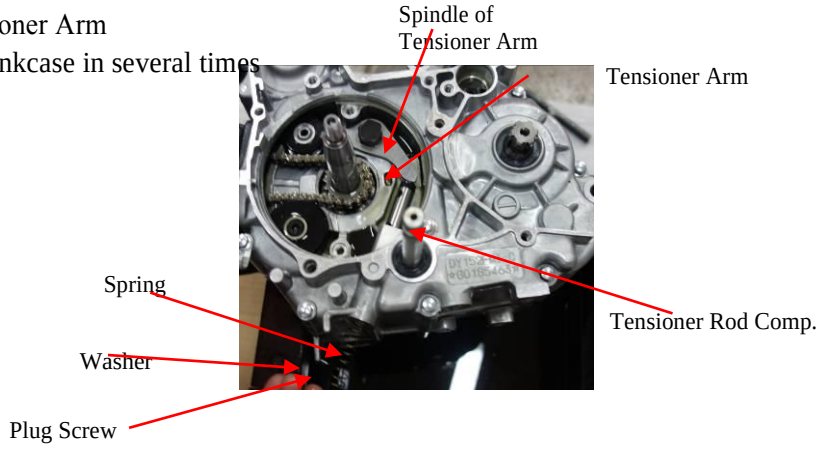
Remove the below parts:

-Plug Screw of Cam Chain Tensioner and Washer

-Tensioner Rod Comp. /Spring

-Spindle of Cam Chain Tensioner/Tensioner Arm

Disassemble and take out the bolt of crankcase in several times

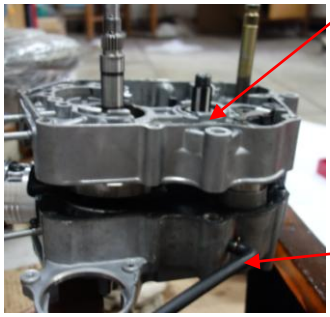


Checking：
Measure the free lengh of tensioner rod spring
Maintain Limited Value： 100mm

Check the wear condition of tensioner rod
Measure the external diameter of tensioner rod

Maintenance limit： 11.94mm

Put the crankcase on the left side
Separate the left and right body of crankcase



Remove the gasket and locating pin

Replace the axle of crankcase

Remove the below parts：
-Roller Pin/Chain Roller
-Bent Axle
-Oil Seal of Countershaft
Take the mainshaft bearing and countershaft bearing out from the crankcase

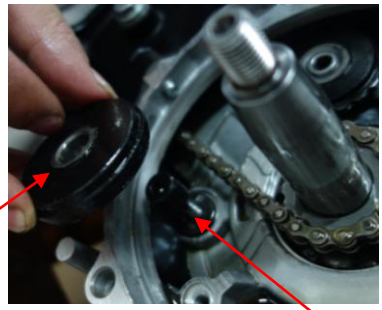
Mount the new bearing into the crankcase

Mount a new oil seal of countershaft into left crankcase， and put grease on it
After grease the new seal, mount it on the crankcase.
Remark：
Align the top of oil seal at crankcase, and avoid the contact between oil seal and bearing.

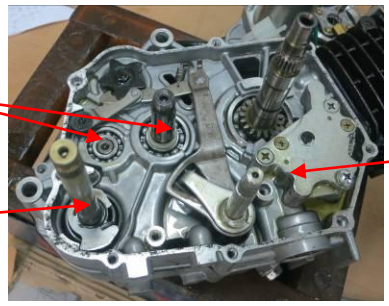
Assembly of crankcase

Clean the surface of crankcase before mounting
Remark：
*Use oilstone for polishing the surface.
*After clean the crankcase, usemachine oil for lubricating the contact surface of crankcase bearing

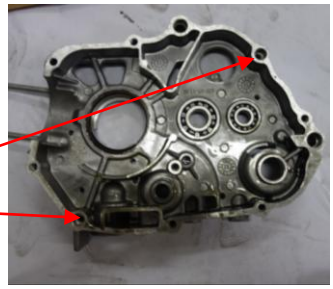
Mount chain roller and roller pin.



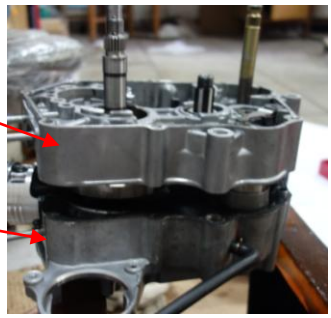
Mount the below parts:
-Crankshaft
-Transmission Mechanism/Gearshift Drum
- Kick Starter



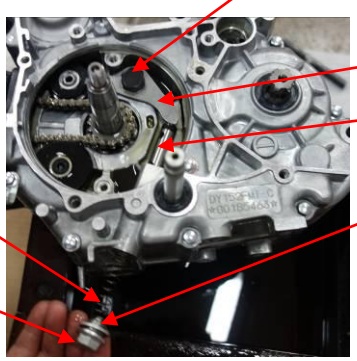
Mount the pin and new gasket



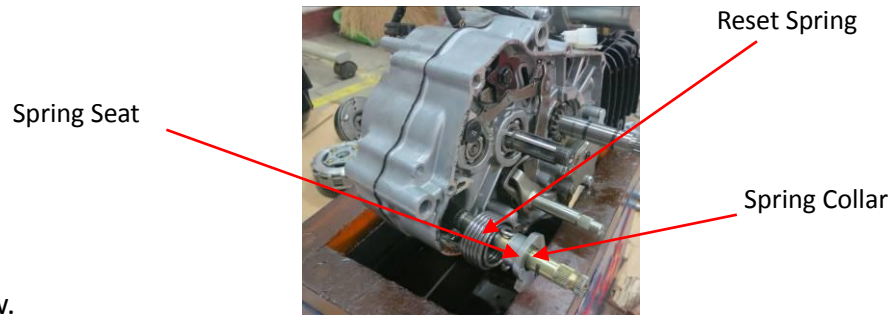
Mount the right crankcase on the left crankcase.
Remark:
Please confirm the gasket does not move.



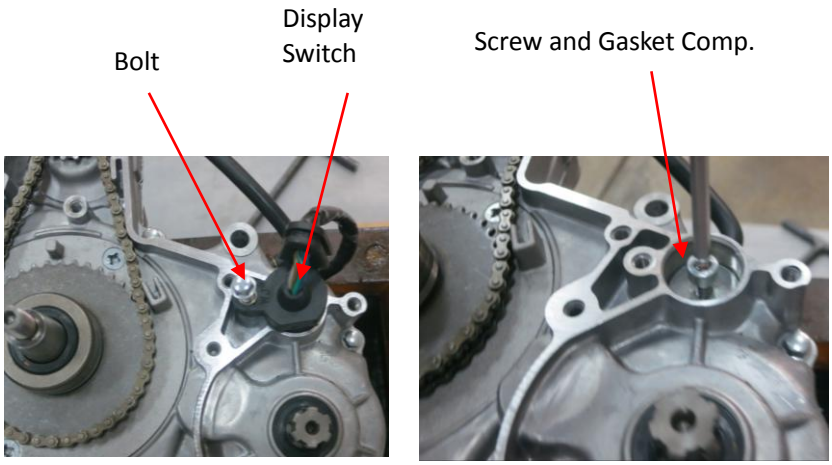
Mount the bolt of crankcase, and tighten them in several time
Mount the cam chain.
Mount the tensioner arm of cam chain and spindles.
Check the condition of washer, if possible, please replace a new one.
Mount the tensioner rod, spring, gasket, and sealing plug.



Mount the kick starter spring and spring seat on the shaft of kick starter.
Put the reset spring on the right crankcase, as the picture.
Mount the spring collar on the starting shaft.



Mount the gasket comp. And screw.
Mount the display switch.
Tighten the bolt.



Torque

No.	Item	Thread Specification (mm)	Torque Value (N • m)	Standard Torque (N • m)
1	Drain Plug	M12×1.5	24 ～ 28	25
2	Exposure Drain Plug	M30×1.5	10 ～ 15	12
3	Timing Nut	M14×1.5	2 ～ 5	3
4	Mechine Oil Scaleplate	M20×2.5	6 ～ 12	8
5	Bolt of Crankcase	M6	8 ～ 12	10
6	Screw of L/R Brandcover	M6	6 ～ 10	8
7	Bolt of Display Switch	M6	6 ～ 10	8
8	Roller Pin	M6	8 ～ 12	10
9	Sealing Plug of Tensioner Rod	M14	20 ～ 25	23

Front Handlerbar Cover

Remove

1、 Turn anticlockwise for removing

The rear view mirror

2、 Remove the screw of front handlebar cover

3、 Remove the screw of rear handlebar cover

4、 Grip both side of the front handler cover and upward to remove the front cover from the rear cover. Unplug the connector of headlight and winkler, and then, removing the front cover.

5、Remove those two screw.

6、Remove the screw and rear handlebar cover

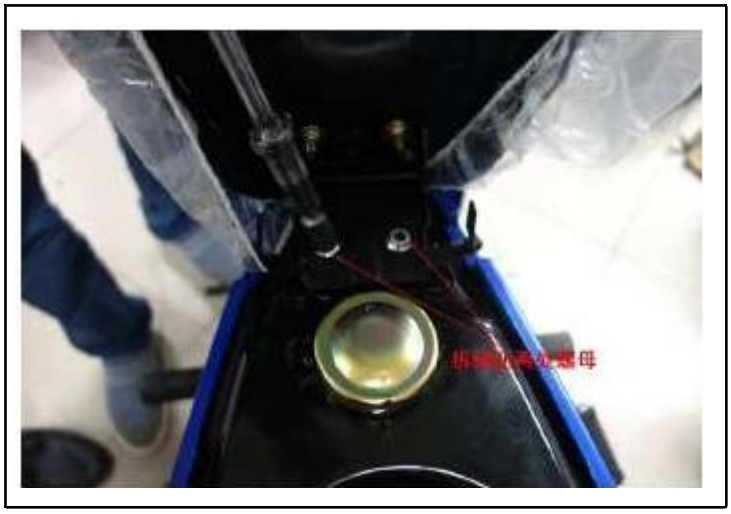
2. Document Box

1、 Remove the bolt, take out one side of hook, and remove the box

3. Seat

1、 Insert the key into the lock, and turn the key for opening the seat

2、Remove the nut and seat



1、Remove the bolt

2、Remove the bolt

3、Following the direction of the pics
to remove the right cover

1、Remove those three bolt

2、Remove these screw, and take off the top cover

3、Remove the bolt

4、Remove the bolt which located right side

5. Remove the bolts which located the left side

6. Remove the bolt which located the left side

7、Remove the left and right leg shield

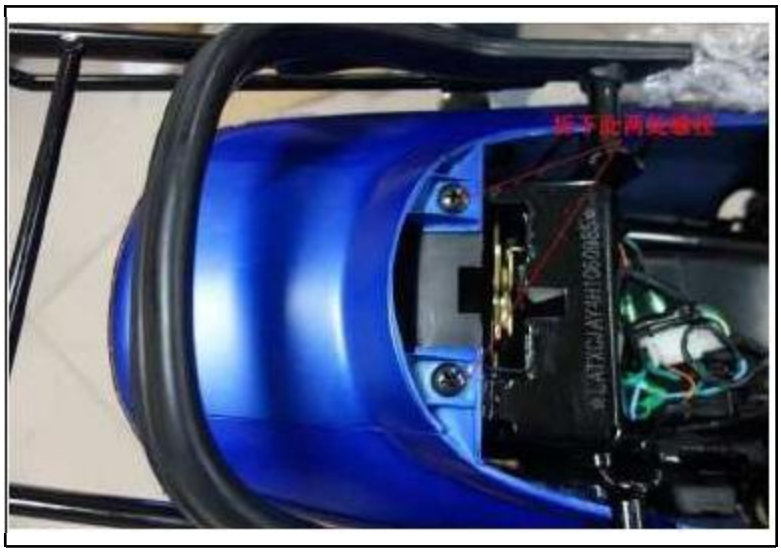
6. Main Pipe Cover

1、Remove the bolt

2、 Remove the bolt and take off the main pipe cover

7 Body Cover

1、 Remove the bolts, backwarding the rear center cover



2、 Remove the bolt which located the right side

3、 Remove the bolt which located the left side

4、 Remove the bolt which located the front part
，

5、Remove the support，

6、Remove the bolt which located the left side

7、Remove the bolt which located the right side

8、Remove the left and right body cover

Front Handlebar Cover

Remove

1、Turn anticlockwise for removing the rear view mirror

2. Remove the screw of front handlebar cover

3、 Remove the screw of rear handlebar cover。

4、Grip both side of the front handler cover and upward to remove the front cover from the rear cover. Unplug the connector of headlight and winkler, and then, removing the front cover.

5、Remove the screw

6. Remove the screw and rear handlebar cover

2. Document Box

1、 Remove the bolt, take out one side of hook, and remove the box

3. Seat

1、Insert the key into the lock, and turn the key for opening the seat

2、Remove the nut and seat

1

1、Remove the bolt

2、Remove the bolt

3、Following the direction of the pics to remove the right cover

5. Front Cover

1、Remove the bolt

2、Remove these screw, and take off the top cover

6. Centre Cover

1、Remove the bolt。

2、Remove the bolt which located right side

3、Remove the bolt which located left side

4、Remove the centre cover

7. Rear Cover of Main Pipe

1、Remove the bolt in each side

2、Remove the rear cover of main pipe

8. Body Cover

1、Remove the bolts, backwarding the rear center cover

2、Remove the bolt which located the left side

3、Remove the bolt which located the left side

4、Remove the left body cover, take off the cable connector of seat lock, and then take off the clip, and take off the left body cover

5、Following the step 2 and step 3, remove the screw and take off the right body cover

9. Front Bottom Shield

Remove the screws, and take off the left and right front bottom shield

10. Left and Right Leg Shield

1、Remove the screw

2、Remove the screw

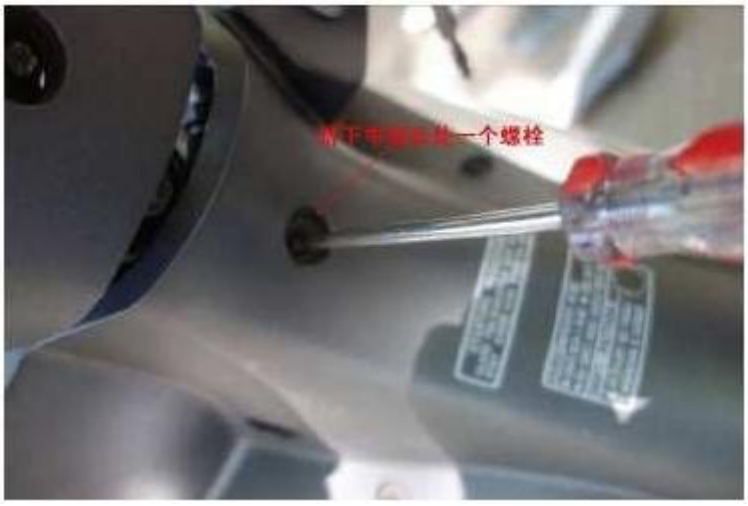
3. Remove the screw, and backward the rear center cover for removing

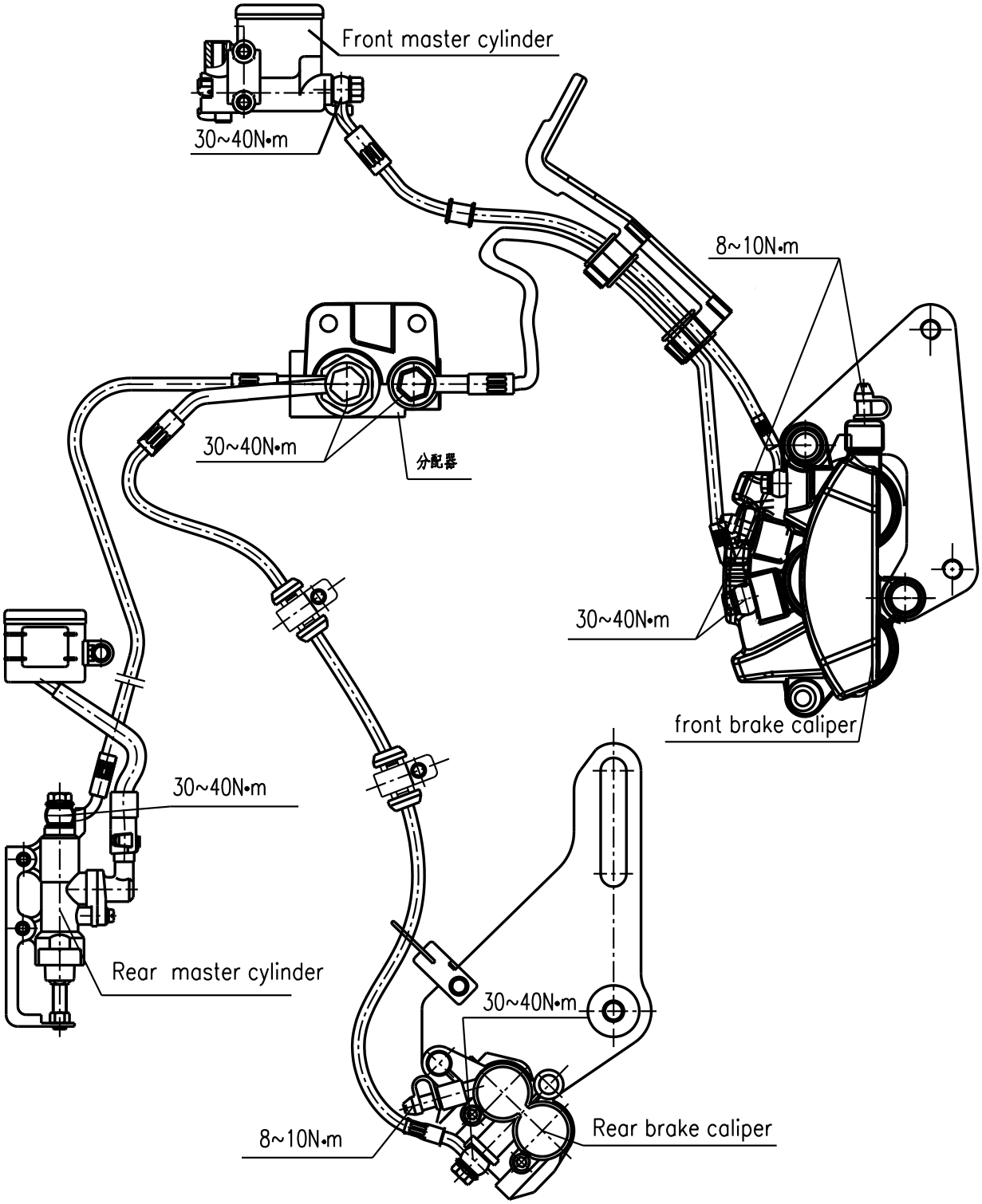
4、Remove the screw and take off the right leg shield

5、Remove the screw and take off the left leg shield

1、Remove the bolt in each side

2、Remove the bolt and take off the front main pipe cover




Front master cylinder
30~40N•m
8~10N•m
30~40N•m
分配器
30~40N•m
front brake caliper
30~40N•m
Rear master cylinder
30~40N•m
8~10N•m
Rear brake caliper

12. Brake System

Checking the braking system

1、 From the end of handlebar to test the free stroke of handlebar.

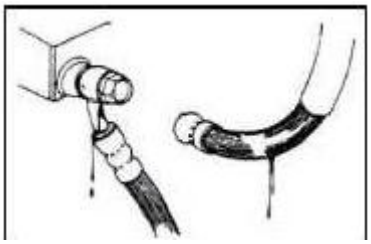
Free Stroke: 5~20mm

2、From the end of gearshift pedal to test the free stroke of gearshift pedal.

Free Stroke: 20-40mm

3. If the stroke range of handlebar and gearshift pedal is greater than the specified range, please checking below:

A、Leakage of Oil

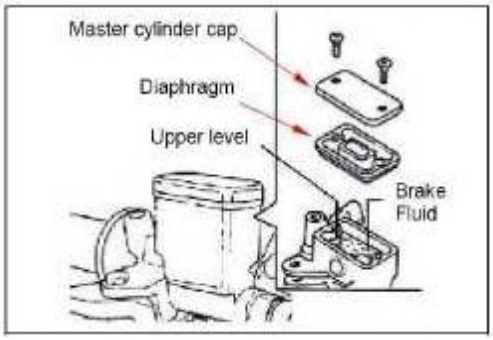


B、Oil is not enough. please fill the oil when liquid level is lower than "**lower**"

front oil cup

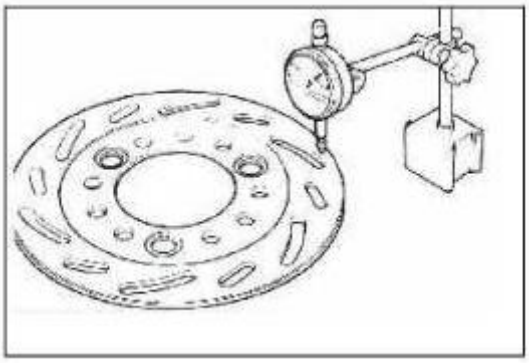
Rear Oil Cup

Caution：after fill the oil, please following the pics to assemble the brake comp., and tighten the screw of brake cover.

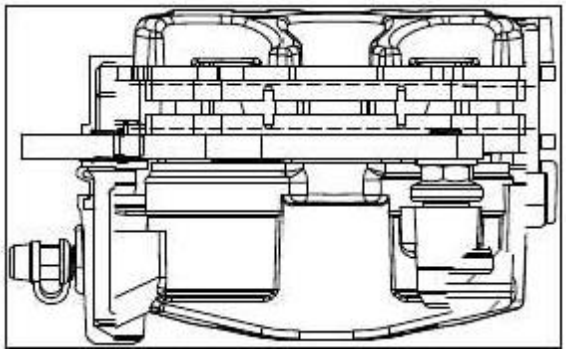


C、Check the abradability of front and rear brake disc, the thickness of front and rear brake disc cannot less than **3.5mm**。

D、Check the face runout of front and rear brake disc, the value cannot more than **0.4mm**



E、Checking the abrasion position of brake disc



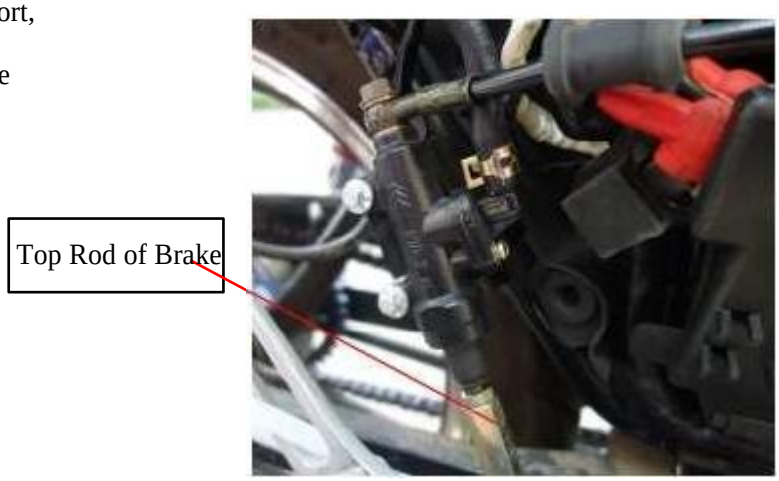
When replacing the braking disc, remove the screw first.

Front Brake Caliper

Rear Brake Caliper

Caution：when assemble the new brakeing disc, please mount the positioning tooth into the groove

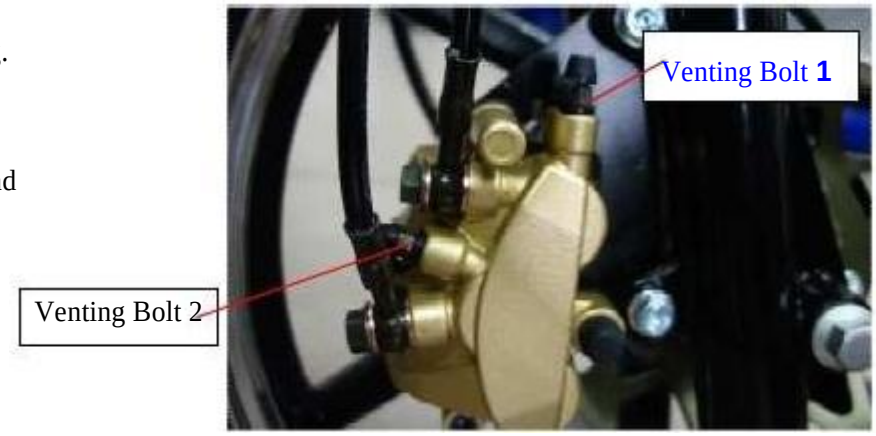
2、The stroke of rear brake pedal is too short, the speed of rear brake assy. is too high, make the top rod of brake shorter, and make the stroke of the stroke of rear brake pedal longer.



3、After changing friction disc, if the braking pressure is low, please venting the air.

Follow these steps exactly when venting.

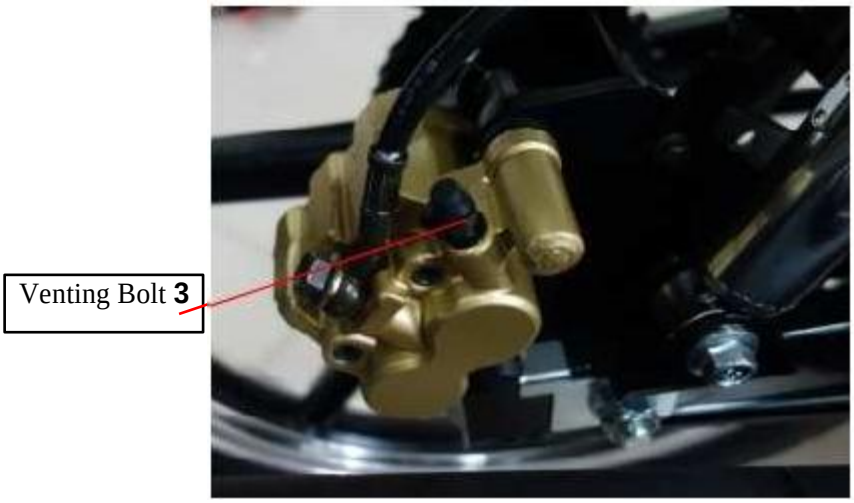
A、Handle brake，grasp the handlbar, loose the venting bolt 1 of brake caliper, and tighten the venting bolt 1， over and over again.



B、Foot brake. step the foot step, loose the venting bolt 2 of brake caliper, and tighten the venting bolt 2， over and over again.

C、Foot brake. step the foot step, loose the venting bolt 3 of brake caliper, and tighten the venting bolt 3， over and over again.

Caution：during venting the air, please be sure that the oil in the oil cup should over the minimum level.



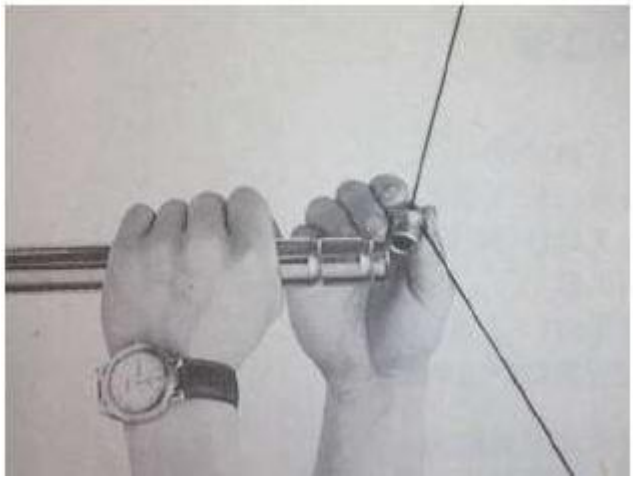
13、Front Shock Absorber/Turn

Remove bolt and front fork。

Remove
Remove the plug of front fork

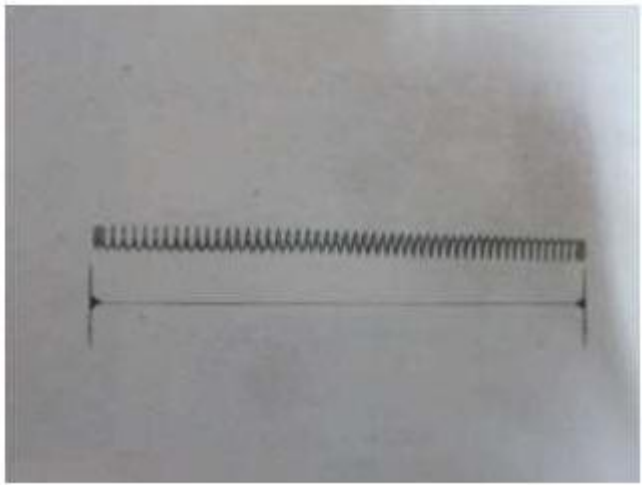
▲Warning

* Plug of front fork is undering the spring pressure, When removing, please be careful, and wearing the goggle and face shield.

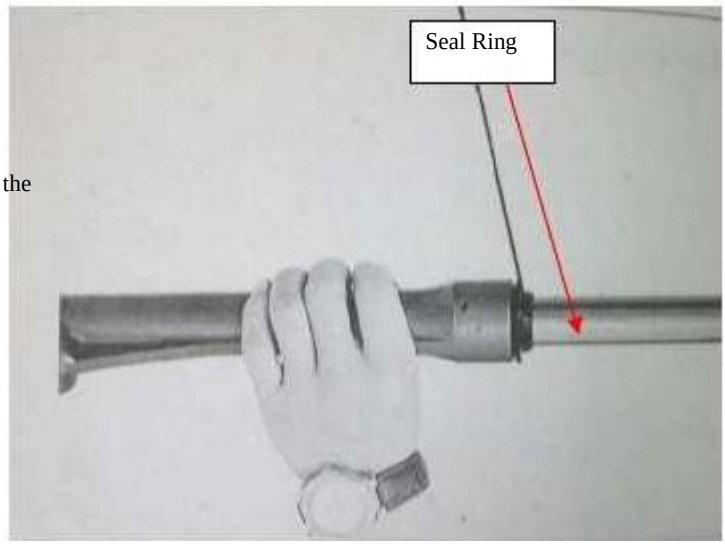


Pour out the oil of front fork, and take out the spring of shock absorber.

Length of spring: 326±



Remove the seal ring.



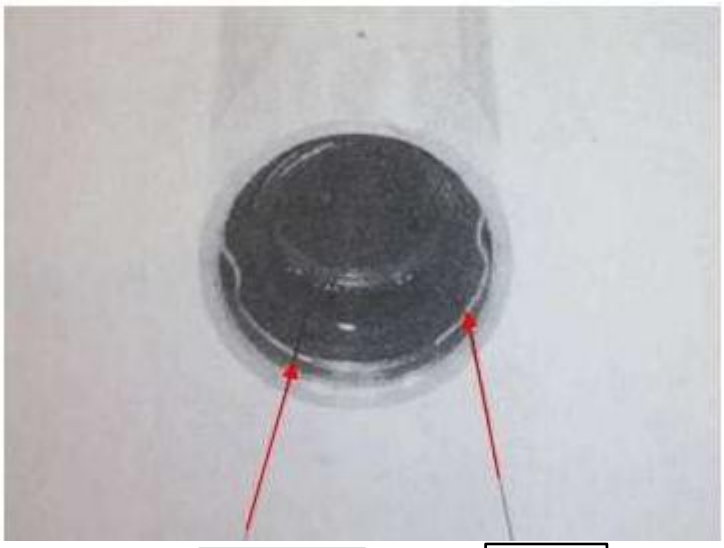
* Be careful and do not scratch the surface of fork

Use pincer pliers to fix the bottom of front fork, and remove the bolt.

Notice

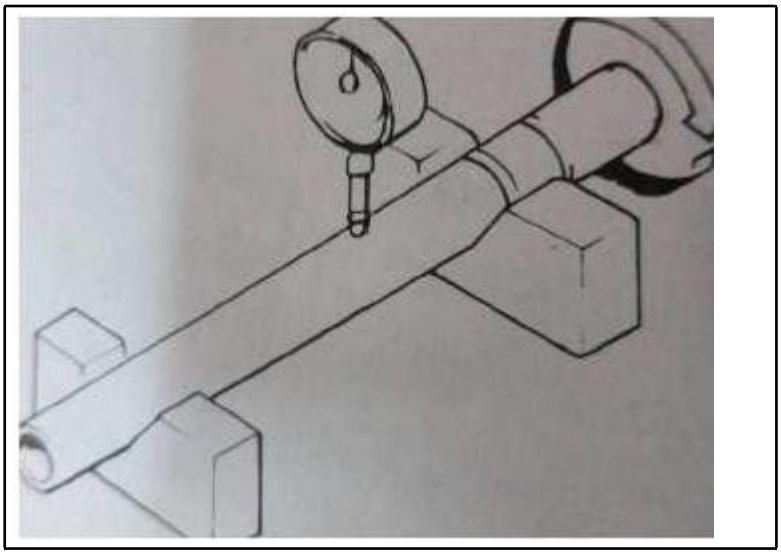
* If it is hard to remove the bolt, please Assemble with cushion spring and front fork Bolt

Take out the fork pipe from bottom tube.
Take out the front fork piston tube from fork pipe.



REMOVE THE GASKET.
REMOVE OIL SEAL

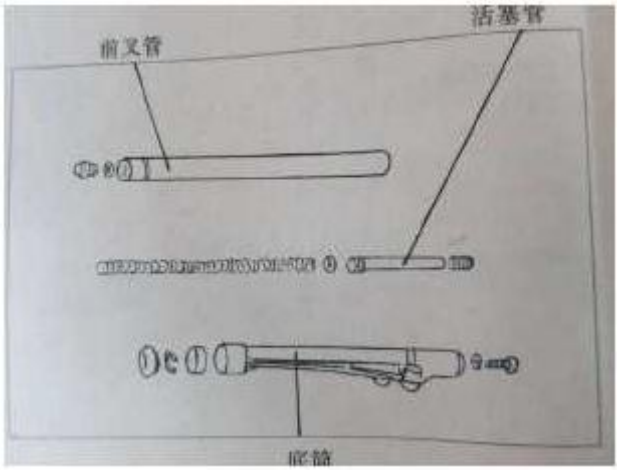
Fork Pipe/ Bottom Tube / Piston Tube
Put the fork pipe on the “V” block, and get
The radial play eccentricity.



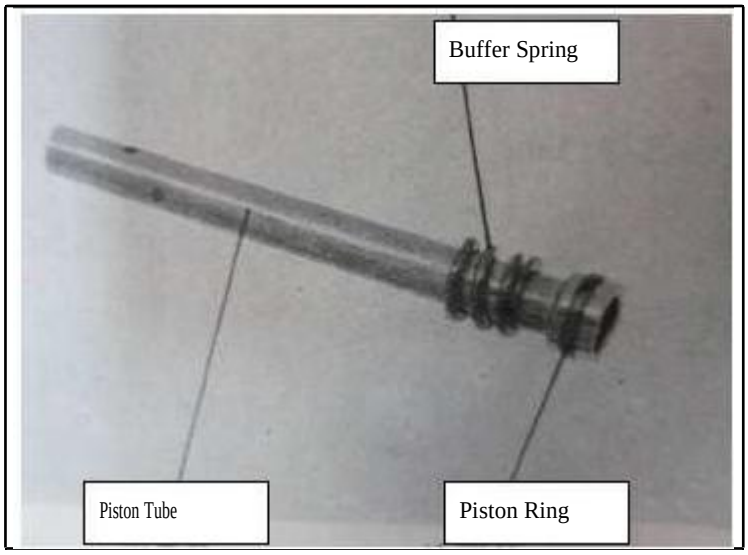
Practical radial play eccentricity should be the half of displayed radial play eccentricity..

Maintain Limited：0.2mm

Check the scratch and abnormal wear of front fork pipe, bottom tube, and piston tube.

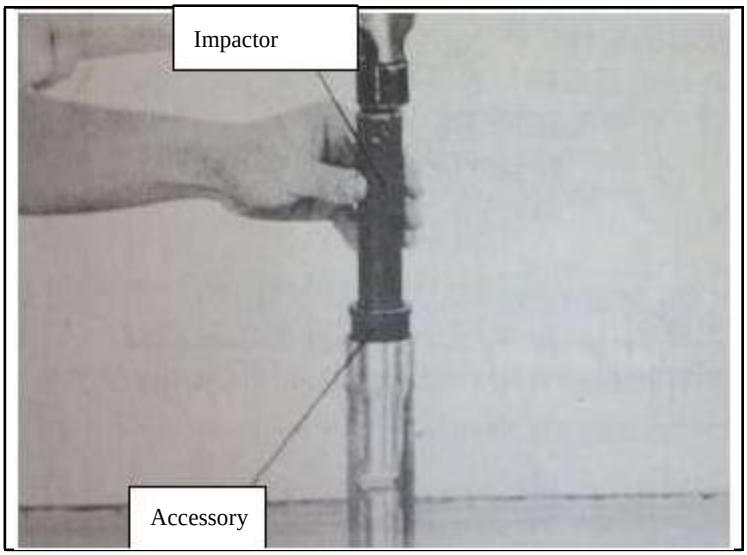


Check the wear condition of piston ring
Check the wear condition of buffer spring.
Replace the broken parts



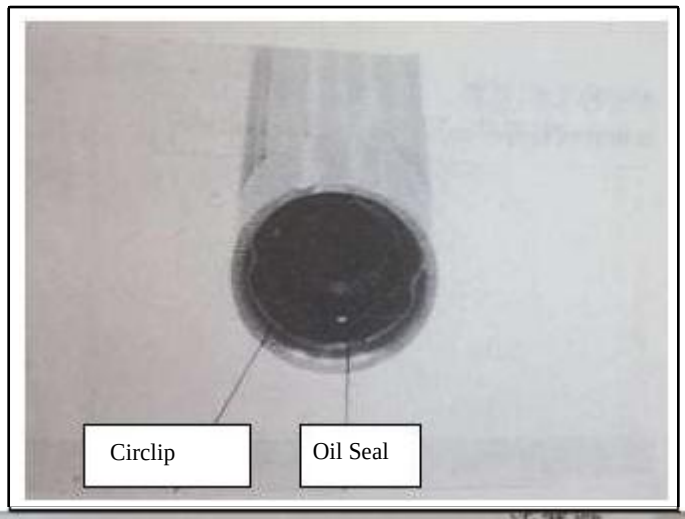
Assembly

Put the oil seal into the bottom tube.



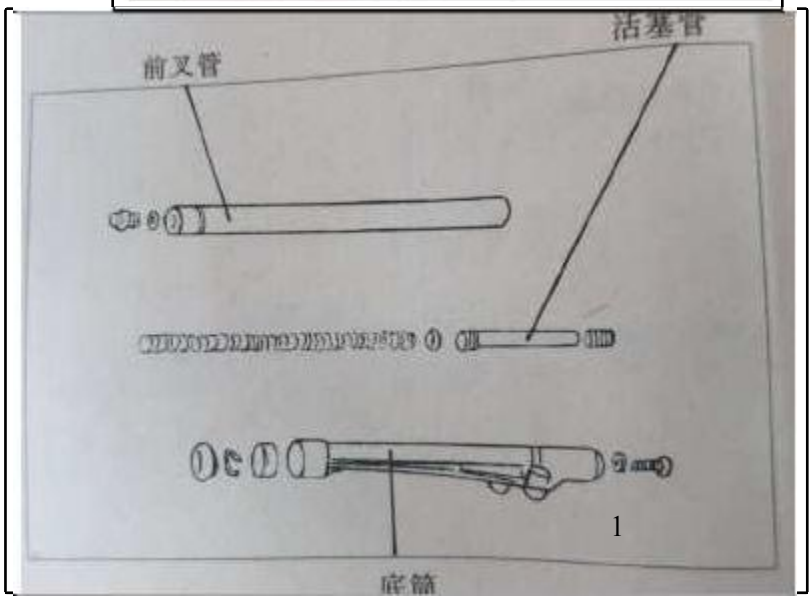
Tighten the nut to the regulation torque value.

Torque Value：5.0kg·m



Connect the shaft of meter

Adjusting the free stroke of brake handle.



Use jaw vice to fix the front fork pipe.

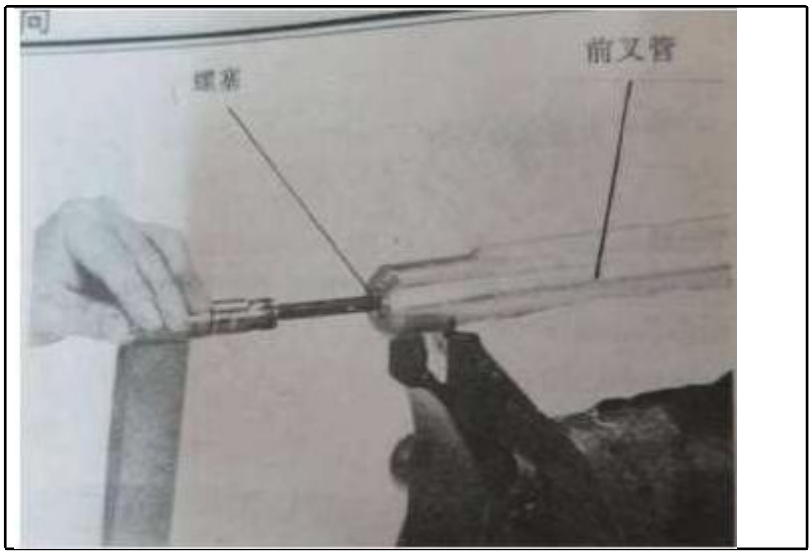
Assemble the new “o” seal rings and plug.

Tighten the nut to the regulation torque value

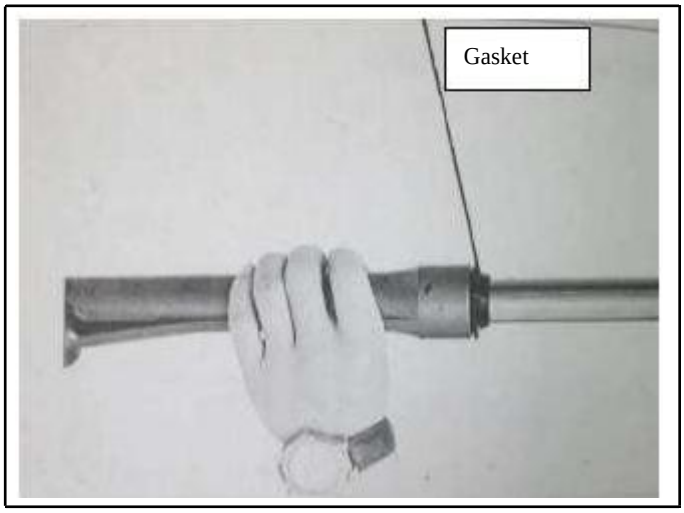
.Torque Value：2.0kg·m

Remark

* If it is hard to fix the plug, please assemble the damping spring and front fork plug for the moment

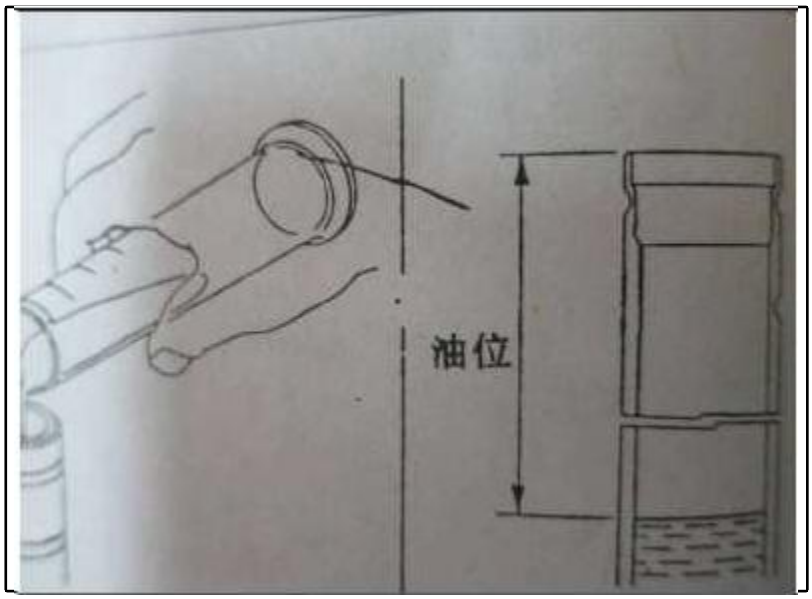


Mount the gasket.



Trickling the regulation oil in to the fork stem

Suggest to use the front fork oil
Front fork oil capacity：56cc
Horizontal place of fork oil：126mm

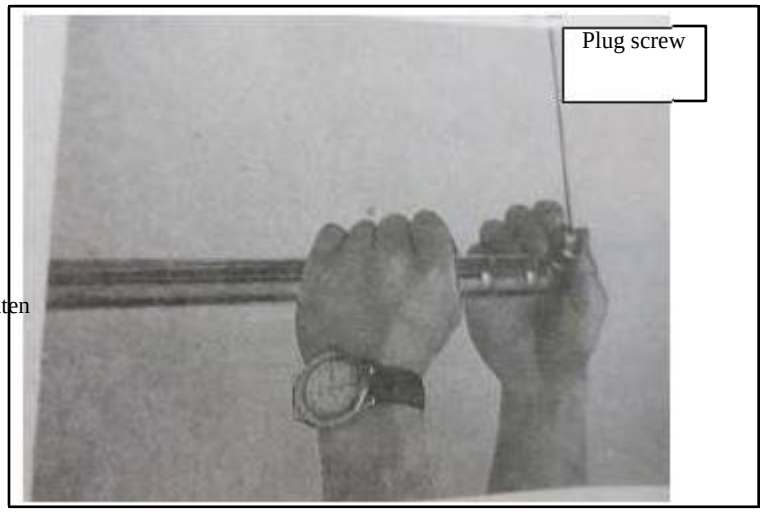


Remove the bolt and front fork stem

Put the O rings on the front fork plug screw, and twist the bolt into the front fork stem

Remark

* When mounting the front fork on the steering stem, tighten the screw to the regulation torque value.



Install

Put the fork stem into the turning steering stem

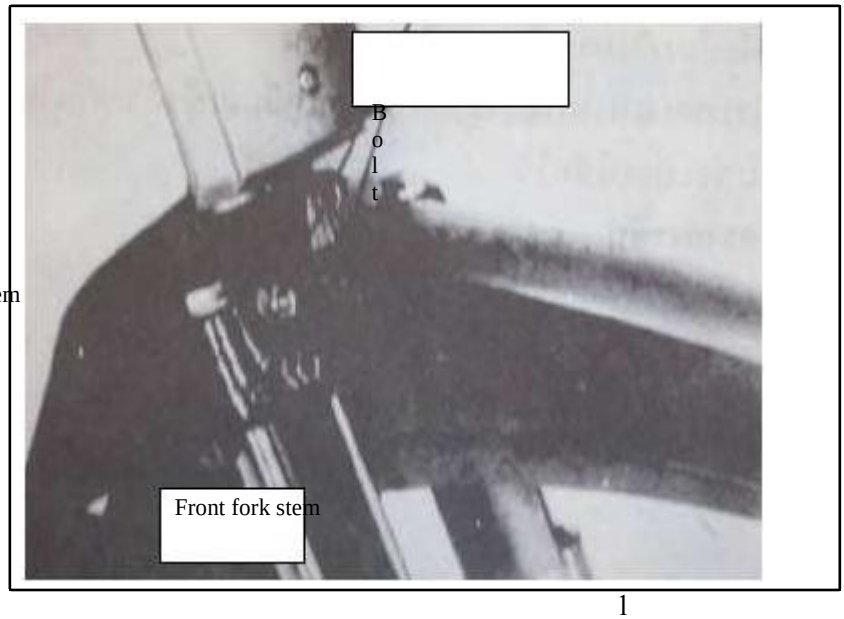
Align the top of front fork at the surface of steering stem

Mount and fix the bolt to the regulation torque.

Torque：7.5kg·m

Tighten the bolt of front fork to the regulation torque

Torque：2.3kg·m



1

If assemble, please following the reverse order which disassemble it.

Turning steering stem

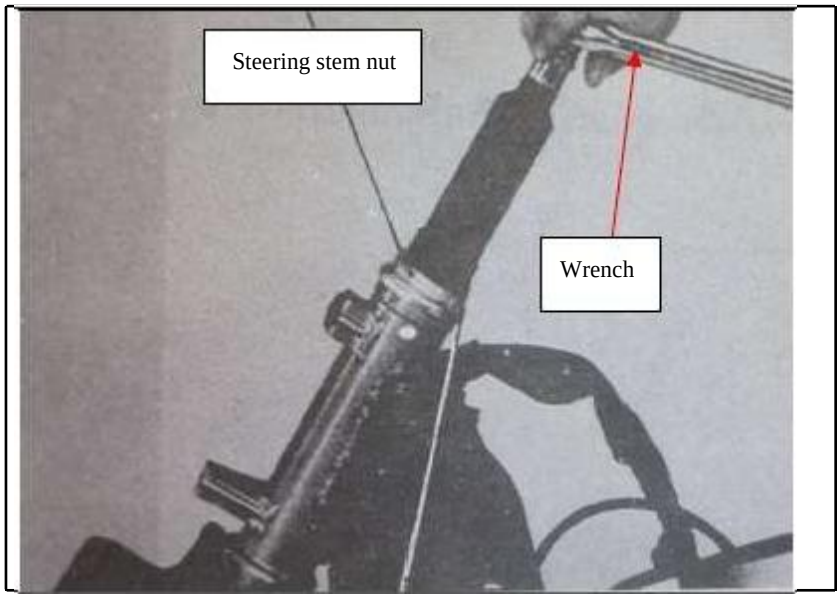
Disassembly

Remove the following parts

Disassemble the connector of handle switch

Disassemble the bolt of handle support and handle comp

Remove the steering stem nut



Remove the following parts

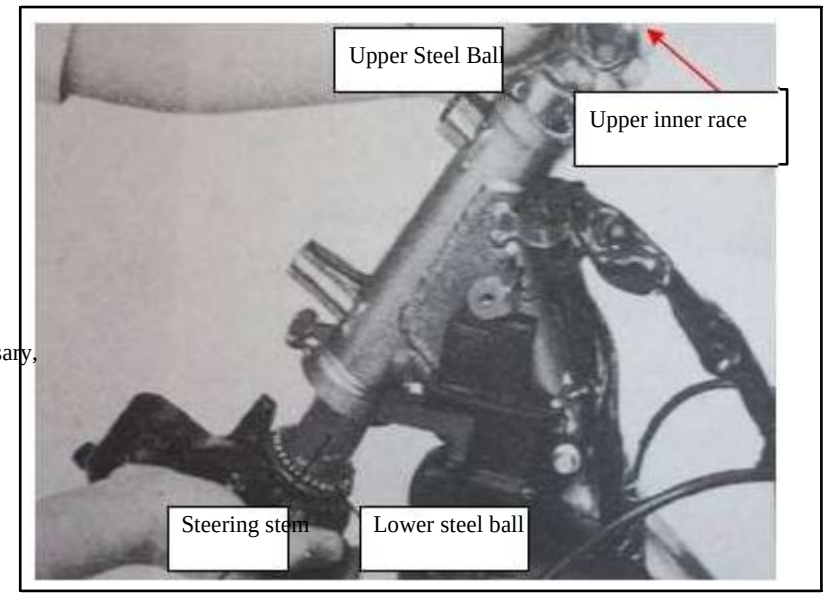
--Upper nut

--Upper inner race

--Upper steering ball

--Steering stem

--Lower steel ball



Check

Check the inner and outer race and steel ball, if necessary, please replace it immediately。

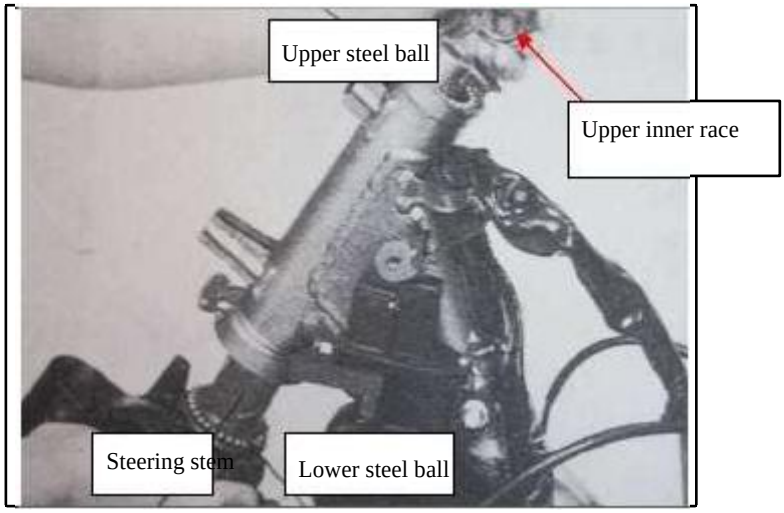
Remark

* Compare the complete set to replace axle and race

Replace the lower inner race

USE special tools to strike the lower inner race and gasket.

USE special tools to mounting the new gasket and washer.



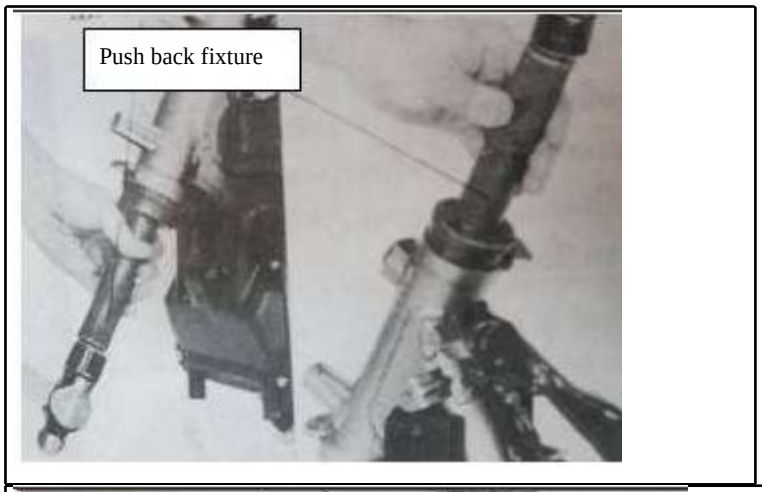
Replace the outer race

Use special tool to strike the outer race

Remark

* If the motorcycle has an accident before, please check the steering stem to make sure the safty.

Use special tool to press the outer race in the steering stem



Install

Anoint the steel ball and race.

Mount the following parts:

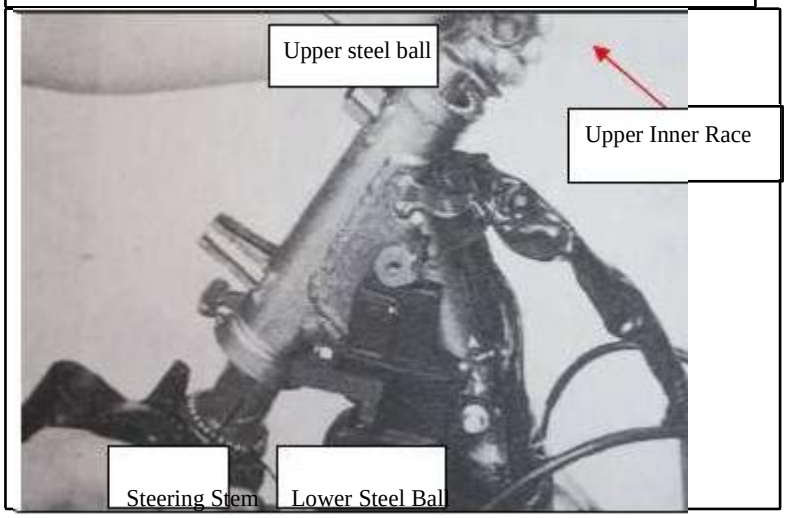
--Upper steel ball（23）

--Lower steel ball（29）

--Steering stem

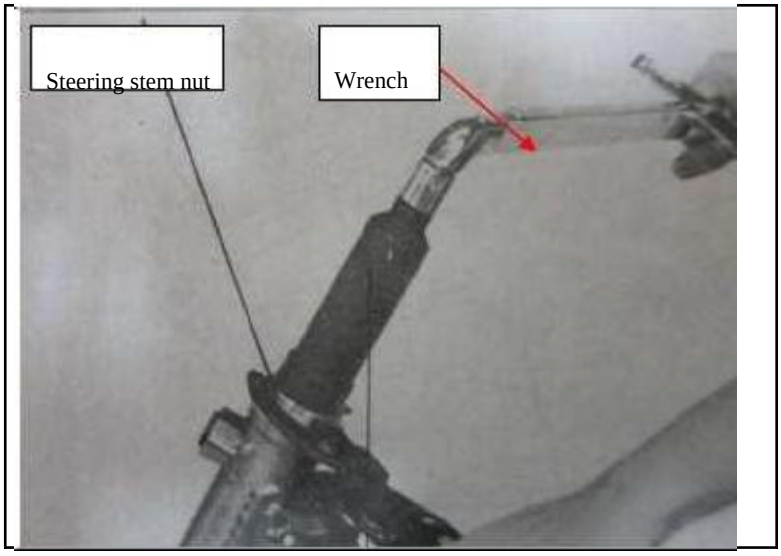
--Upper inner race

--Upper nut



Tighten the upper nuts, and switch back 15～17°。

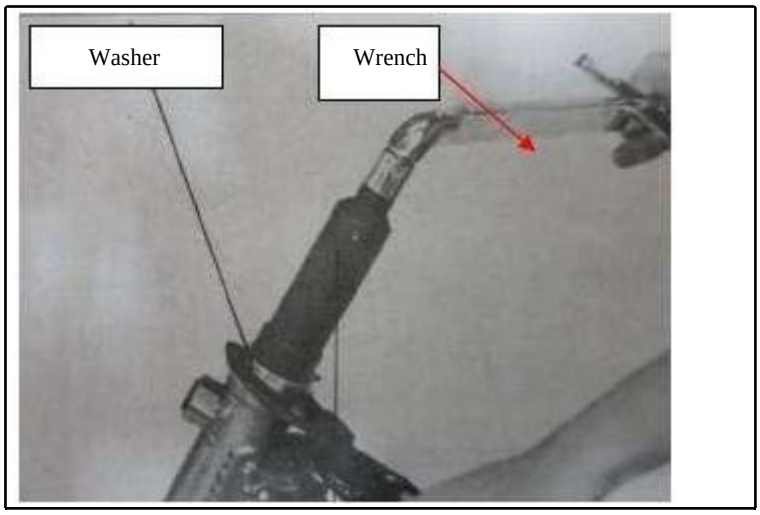
Check the steering condition and make sure that it can turning free.。



Mount the steering stem nut。
Use wrench to fix the bolt and tighten the steering stem nut to the regulation torque.

Torque：7.5kg·m

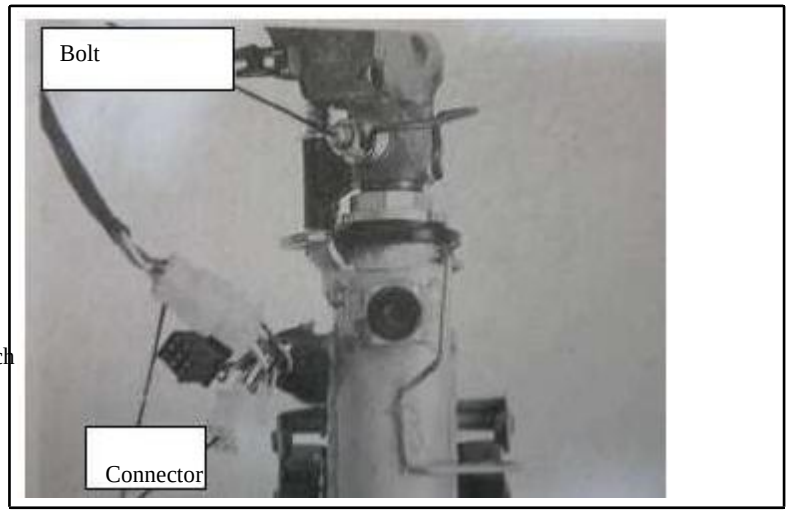
Put the washer on the bottom of the steering tightly.



Mount the handlebar assy.
Mount the bolt of handlebar support and tighten to the regulation torque

Torque：6.0kg·m

If disassemble, please following the reverse order which mount the handlebar assy



Torque values

Mount bolt of rear shock absorber	2.5 kg·m
Lock nut of damp of rear shock absorber	2.0 kg·m

Trouble shooting

Shock absorber is soft

·Spring is soft

·Leak oil of damp

Shock absorber is hard

·False mount method of the component of shock absorber

·Rear fork shaft is curve

·Rear fork shaft collar is broken.

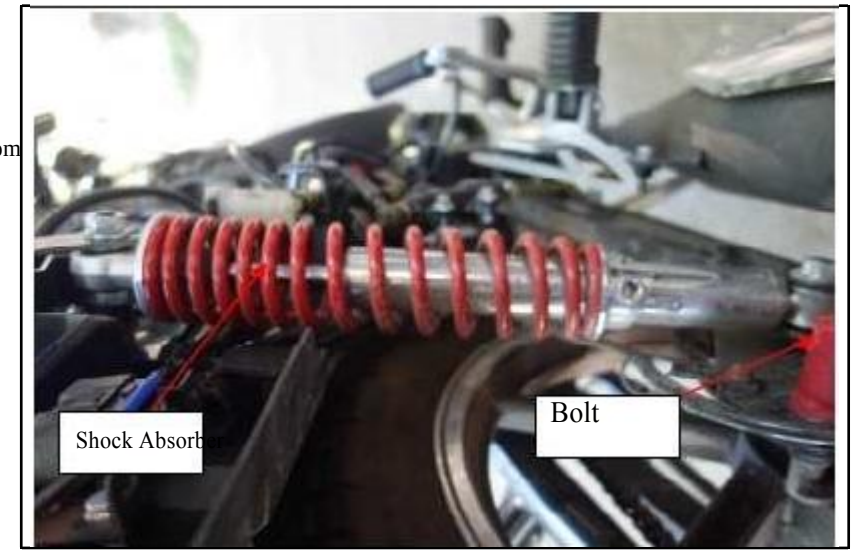
Shock absorber

Disassemble

Use main support to support the motorcycle

Remove the both side cover of motorcycle

Remove the upper and lower mounting bolt of shock absorber, and then taking down the shock absorber from the frame



Remark

* Do not take shock absorber apart.

Mount should following the reverse order in which take shock absorber apart.

Torque：25N·m

Rear Fork

Disassembly

Remove the below parts：

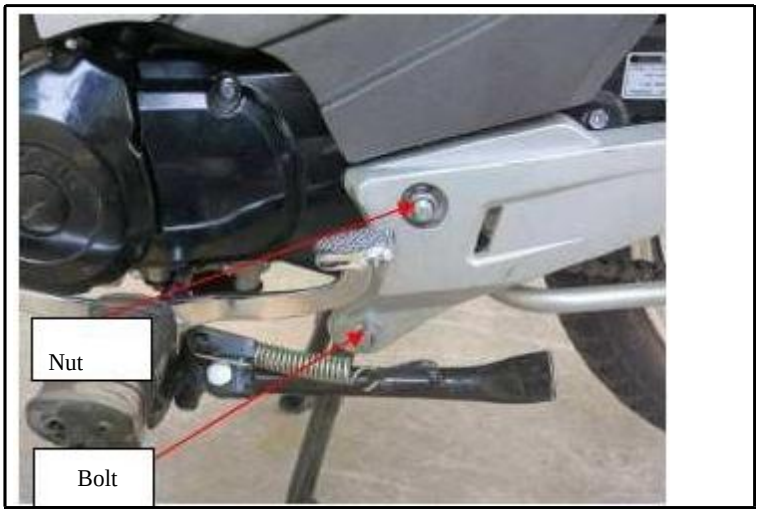
-- Rear Wheel

-- Damper Comp.

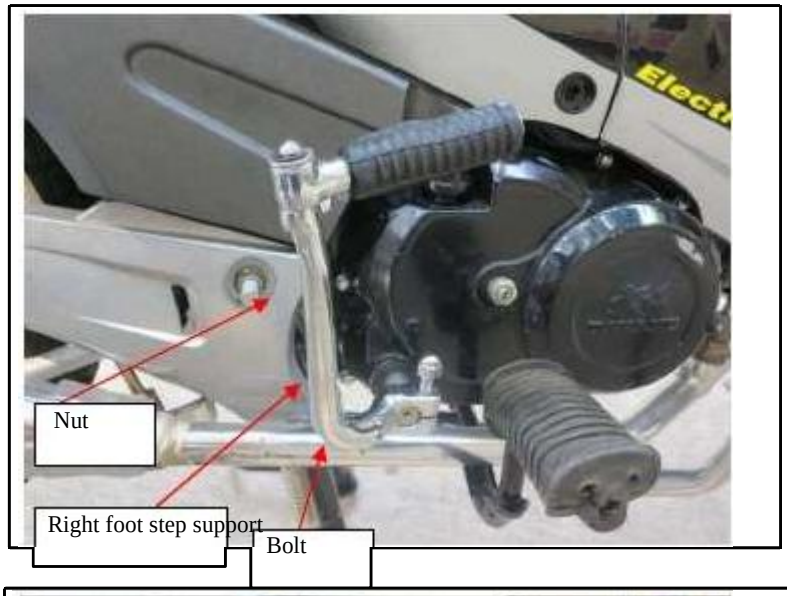
-- Rear Shock Absorber

Remove the mounting bolt and nut of left foot step stand。

Remove the left foot step stand and washer

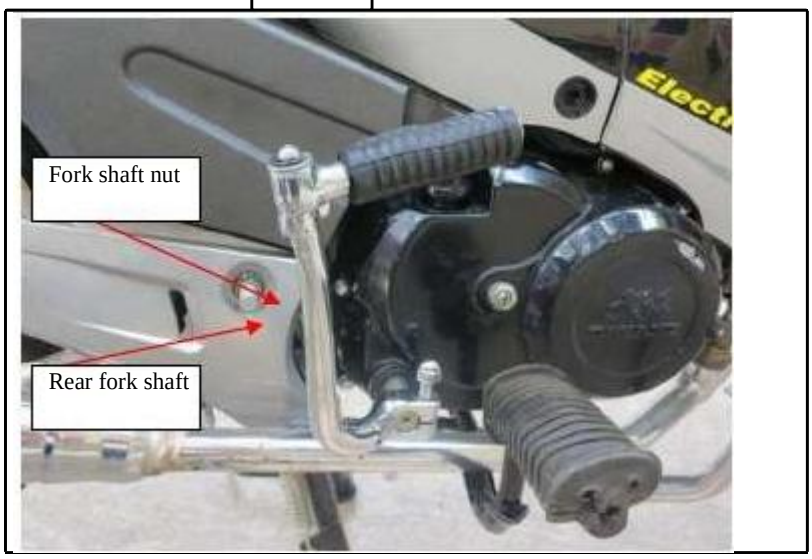


Remove the amounting bolt and nut of right foot step,
Remove the right foot step stand and washer



Fix the fork shaft, remove the fork shaft nut

Remove the fork shaft and rear fork



栓

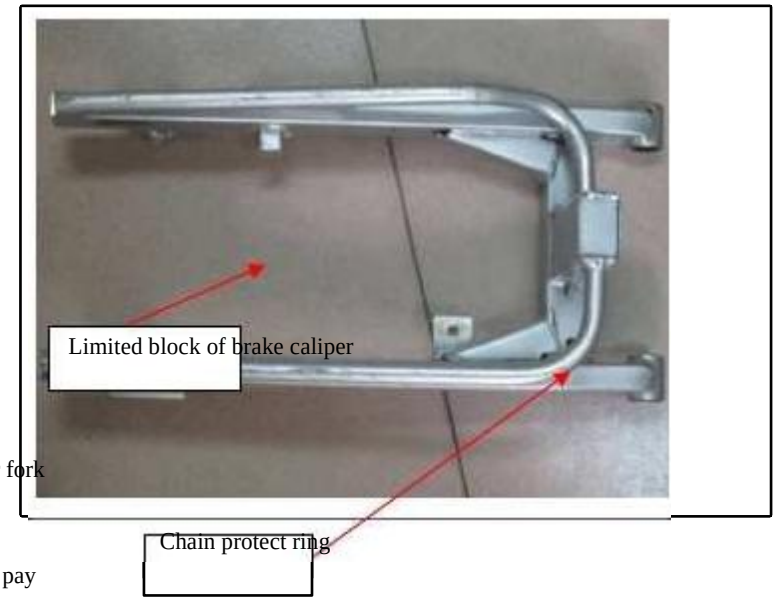
Remove the following parts：

-- Chain protect ring

-- Pin

-- Nut/washer/spring pad

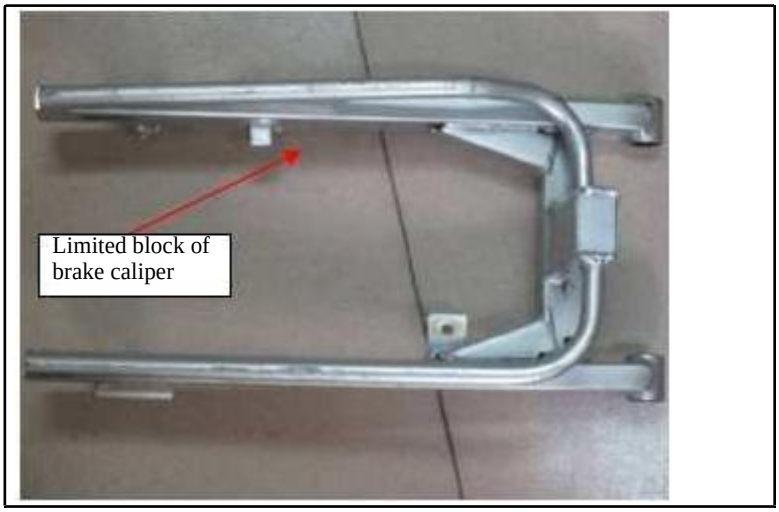
-- Limited block of brake caliper



Check

Check the wear condition of fork shaft collar and rear fork shaft, if necessary, please replace a new one.

Use cork hammers to mounting the collar, and please pay more attention to do not break the collar.

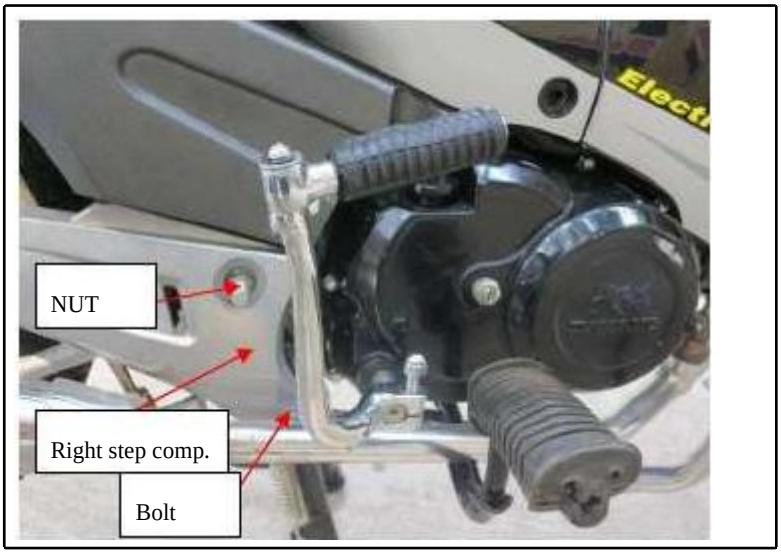


Mount the rear fork on the frame

Mount the rear fork shaft and axle nuts

Fix the rear fork shaft, tighten the axle nut to the regulation torque.

Torque：4.0kg·m



Mount washer and right step stand

Mount bolt and nuts, and tighten to the regulation torque.

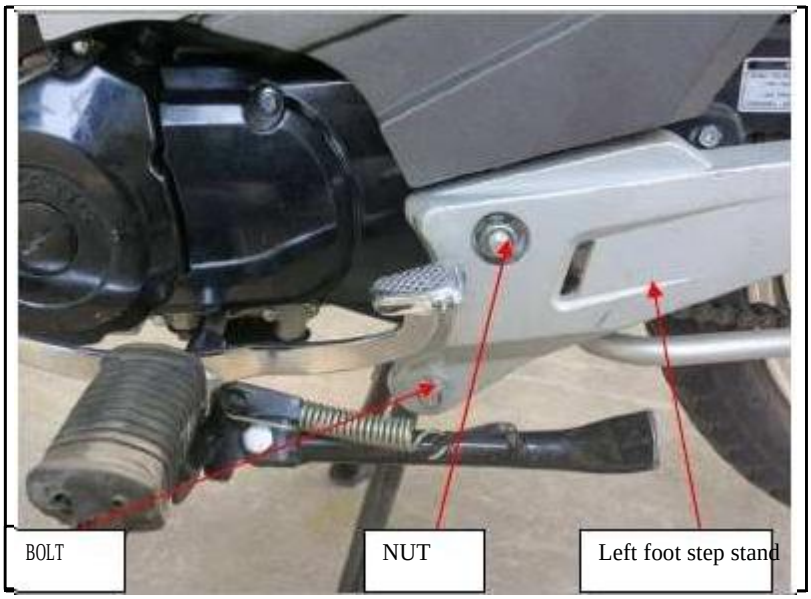
Torque：Mounting nuts：4.0kg·m

Mounting bolt：2.2kg·m

Mount washer and left side stand
Mount nuts and bolts, and tighten them to the regulation torque

Torque：Mounting Nuts：4.0kg·m
Mounting Bolts：2.2kg·m

Mount the following parts：
-- Shock absorber
-- Damper comp.
-- Rear wheel



15，Front wheel/Front brake/Front Shock absorber/Turning

Maintain information

Overview

▲ Warning

* A dirty braking disc or braking pad will reduce the brake performance. Please replace the dirty braking disc, and using the better degreaser for cleaning the braking disc.

* This chapter including the maintain information of front wheel, front braking, front shock absorber and turning.

* When maintains the front wheel, please use jack or other support to support the engine for making sure the front is not on the ground.

Technical specification

		STANDARD VALUES	MAINTAIN LITEDVALUE
Axle radial play eccentricity		------	0.2
Rim radial play eccentricity	Radial direction	------	2.0
	Axial direction	------	2.0
Formulate hub inner diameter		110.0	111.0
Thickness of brake pad		4.04.0--4.3	2.0
FRONT FORK	Horizontal plane ofoil level	9393mm	------
	Oil Capacity	56cc	------
	Free length of front fork spring	319.4	313
	Steering stem radial play	------	0.2

General tool

Wrench	07702-0020001
Gatherer	07749-0010000
Fixture accessory 32×35mm	07746-0010100
Gatherer 10mm	07746-0040100

Trouble shooting

Hard for turning
·Adjusted nut of steering bearing is too tight
·Steering bearing/race is broken.
·Tire pressure is not enough.
·Tyre flat

Turn to one side or cannot go straight
·Front fork is curve
·Front axle is curve
·Wheel mounted incorrect
·Steering bear is broken
·Frame wraps
·Front wheel bearing is broken.
·Balance staff wears out.

Front wheel shimmy
·Rim is out of round
·Front wheel axle wears out
·Rim is out of shape
·Tyre problems

Wheel is hard to turn
·Front wheel bearing has problem
·Gear of speedometer is broken.

Shock absorber is soft
·Front fork spring is incapability
·Front fork oil is not enough

Shock absorber is hard
·Weight of damping fluid is inconformity
·Breeches pipe is curve
·Fluid circuit is blocking

Loud noise of front shock absorber
·Not enough fluid in fork
·Fastener has loosen
·No oil of speedometer gear

Bad braking performance
·Braking adjustment is not good
·Braking lining is wear out
·Braking drum is wear out
·Braking cam gear is wear out
·Incorrect installed method of braking lining
·Braking cable needs to lubricate
·Dirty braking lining
·Dirty braking hub
·Brake pad is wear out which contact to cam gear
·Cam gear is not mesh with brake arm

Left handlebar is hard to move or reset
·Reset spring is broken or wear out
·Automatic adjustment is not good
·Dirty braking hub is viscous
·Brake pad is wear out which contact to cam gear
·Braking cable needs to lubricate.
·Incorrect installed method of braking lining

Braking noise
·Braking lining is broken
·Braking hub is broken
·Dirty braking lining
·Dirty brake hub

Tool

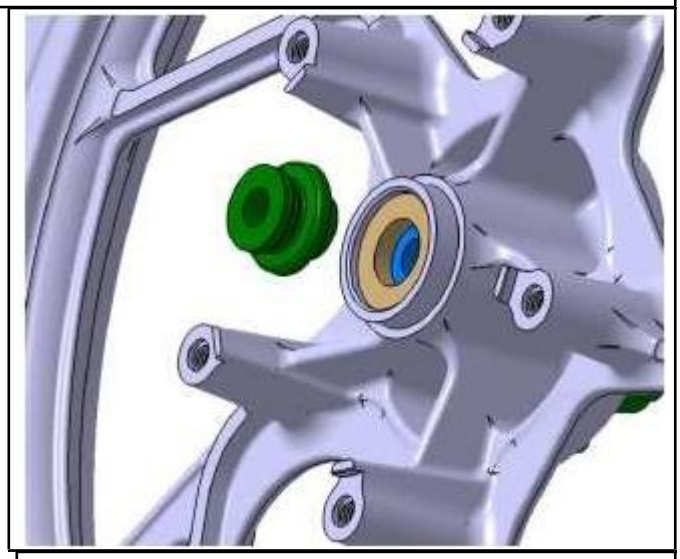
Forcer

Forcer accessory 37×40mm

Guide rod，12mm

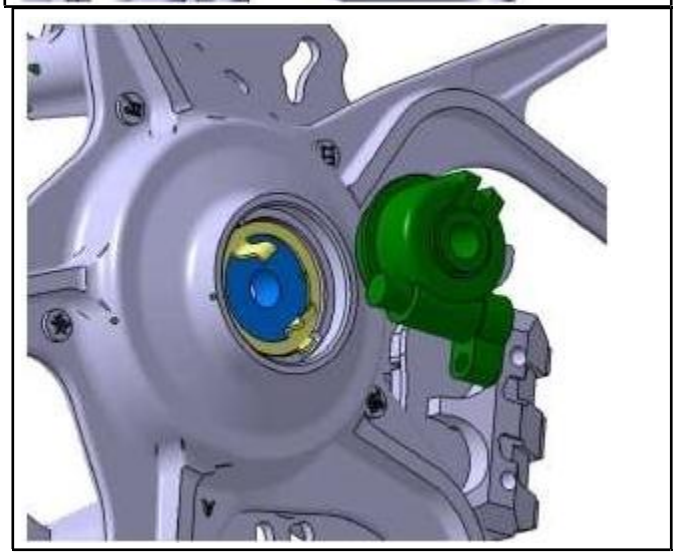
Mount the isolation pad, and press into the left bearing

Smear oil seal with grease, and mount the gasket



Mount front wheel

Align the protrusion of speedometer gear at the groove of drive plate of hub, and mount the brake disc on the hub.



Align the brake caliper jaw at the front brake disc and mount on the front wheel

Mount the axle on the front wheel from the left side

Tighten the nut to the regulation torque value.

Torque value：5.0kg·m

Connect the flexible shaft of speedometer

16 Rear wheel/Rear brake/Rear shock absorber

Maintain information

Overview

Warning

*A dirty braking disc or braking pad will reduce the brake performance. Please replace the dirty braking disc, and using the better degreaser for cleaning the braking disc.
When maintains the rear wheel, please use jack or other support to fix the motorcycle

MAINTAIN VALUE

		Standard Value	Maintenance Value
The radial runout of axle		------	0.2
The radial runout of rim	radial	------	2.0
	longitudinal	------	2.0
Inner diameter of brake drum		110.0	2.0
Thinkness of braking pad		4.0	

Torque value

	50N • m
Rear shaft nut	45N • m
Rear axle house nut	15N • m
Rear brake connecting nut	40N • m
Rear brake spindle nut	10N • m
Braking arm bolt	10N • m
Chaincase bolt	25N • m
Rear shock absorber mounting nut	20N • m
Rear shock absorber damper lock nut	

Tool

Special tools

Shock absorber compressor

Compressor screw

General tool
Forcer
Forcer fixture 37×40mm
Guide rod，12mm
Shaft of shaft bearing replacer
Head of shaft bearing replacer，12mm

Trouble shooting

·Shock absorber is soft
·Spring is soft
·Damper lacks the oil

·Shock absorber is hard
·Installation of shock absorber units is incorrect.
·Rear fork shaft is curve.
·Rear fork bush is broken.

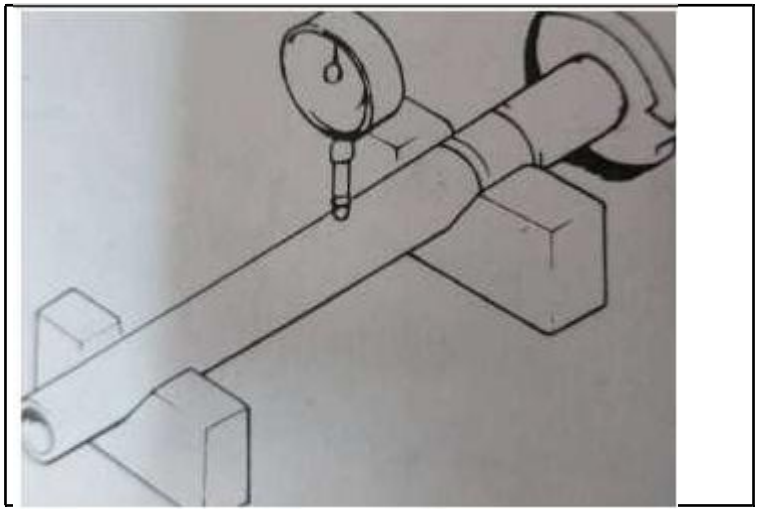
·Drift from the lane when driving
·Rear axle shaft is curve.
·Axle and chain is inequality

·Rear wheel is shake.
·Rim is out of round.
·Wear out of rear wheel bearing
·Air leakage of rear tyre

Rear wheel/Rear brake/Dapmer comp.

Remove the rear wheel
Support the motorcycle by main stand
Remove the adjust nut of rear brake, and remove the brake rod from the brake arm, then remove the limited arm of brake from the brake disc.

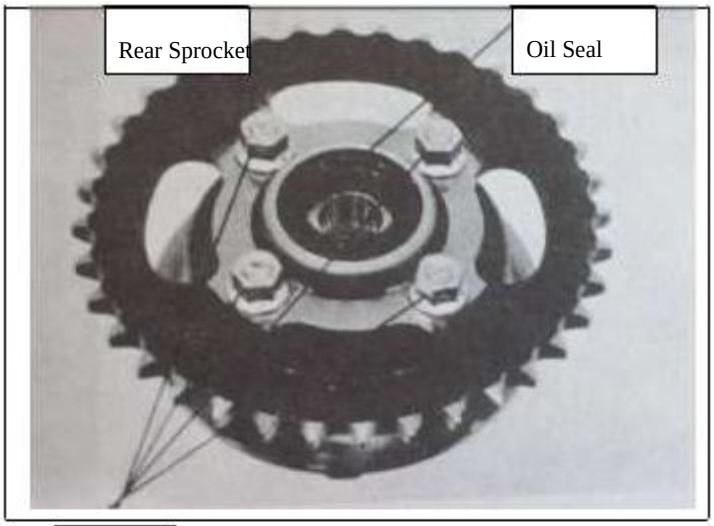
Loose locknut and sleeve nut.
Loose chain for adjusting the nut
Remove locknut and take out the axle
Remove side pad.
Pull the wheel backward for taking the rim away from the damper comp.
Remove the rear wheel
Remove the brake disc from the rim



Check rear wheel

Axle

Put the axle on the “V” support, recording the radial runout of axle.
Maintains limiting value：0.2mm



Check the damper comp.

Rear sprocket

Check the wear condition of the sprocket.

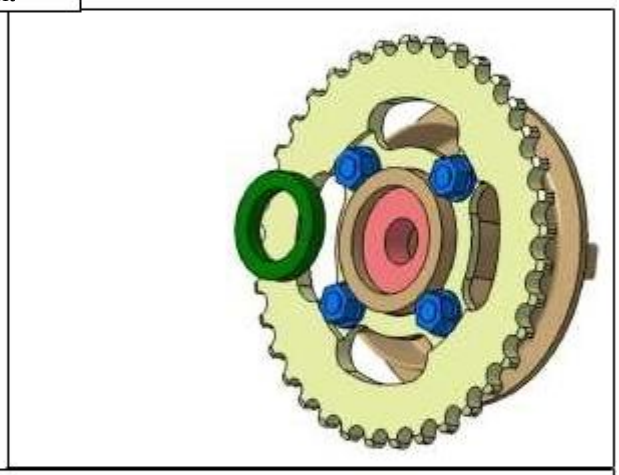
If necessary, please replace the rear sprocket.

Remark

* If need to replace the rear sprocket, please check the chain and driving sprocket.

Mount the damper comp., on the rear wheel, and loose the bolt.

Remove the damper comp. from the rear wheel.



Remove the rear sprocket.

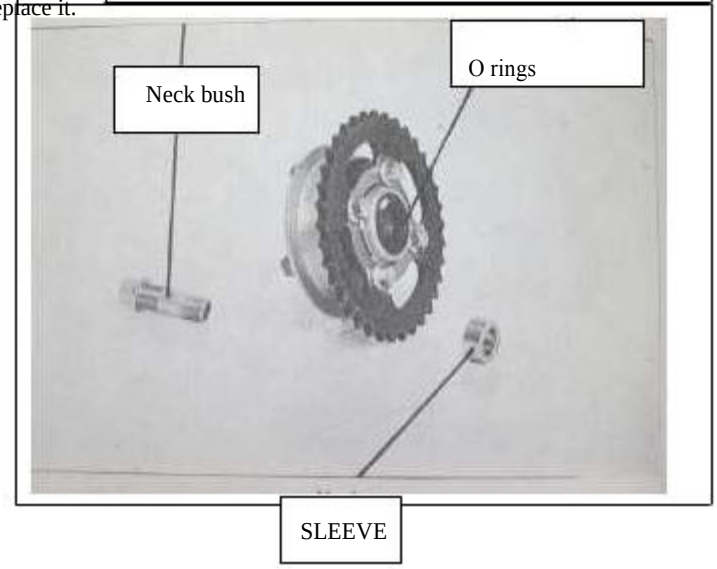
Mount the rear sprocket on the damper comp., and tighten the bolts.

Torque：3.3kg·m

Bearing of damper comp.

Turn the damper comp. and check the bearing of damper comp..

If the sound or clearance of bearing is abnormal, please replace it.



Replace the bearing of damper comp..

Remove the neck bush.

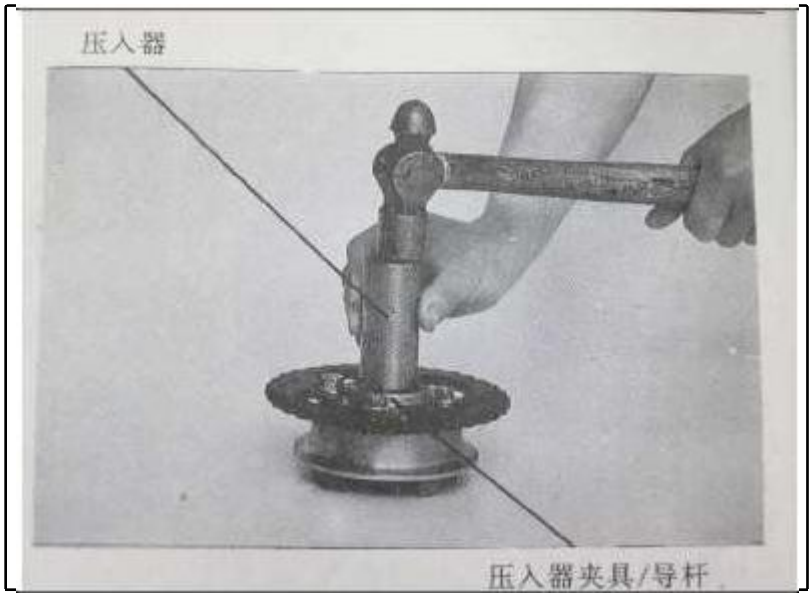
Remove the sleeve.

Remove the O rings and take out the bearing

Remark

* After remove the old bearing, put a new bearing into the damper comp..

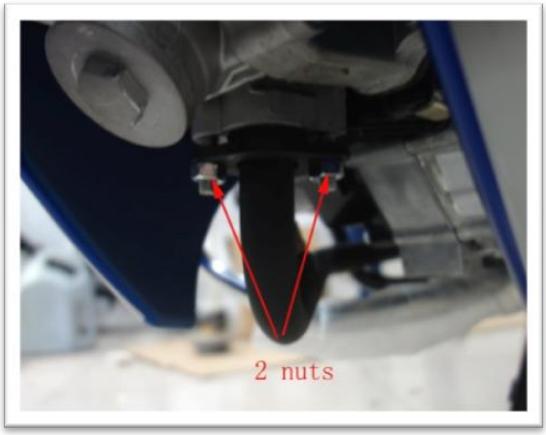
Feed the oil into the new bearing.
Press the bearing straight until the bearing is complete localization.



Muffler

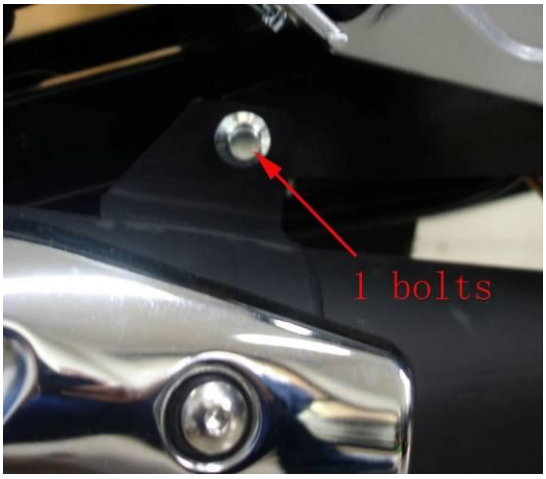
Removal

Loosen the 2 nuts from exhaust muffler front side.



Loosen the 2 mounting bolts by exhaust muffler right side.

Remove exhaust muffler.



Installation

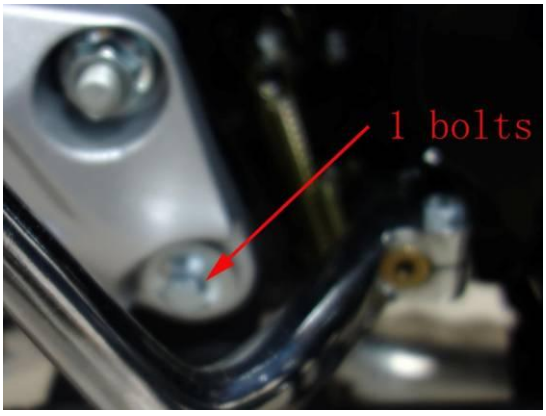
Install in reverse order of removal procedures.

Caution

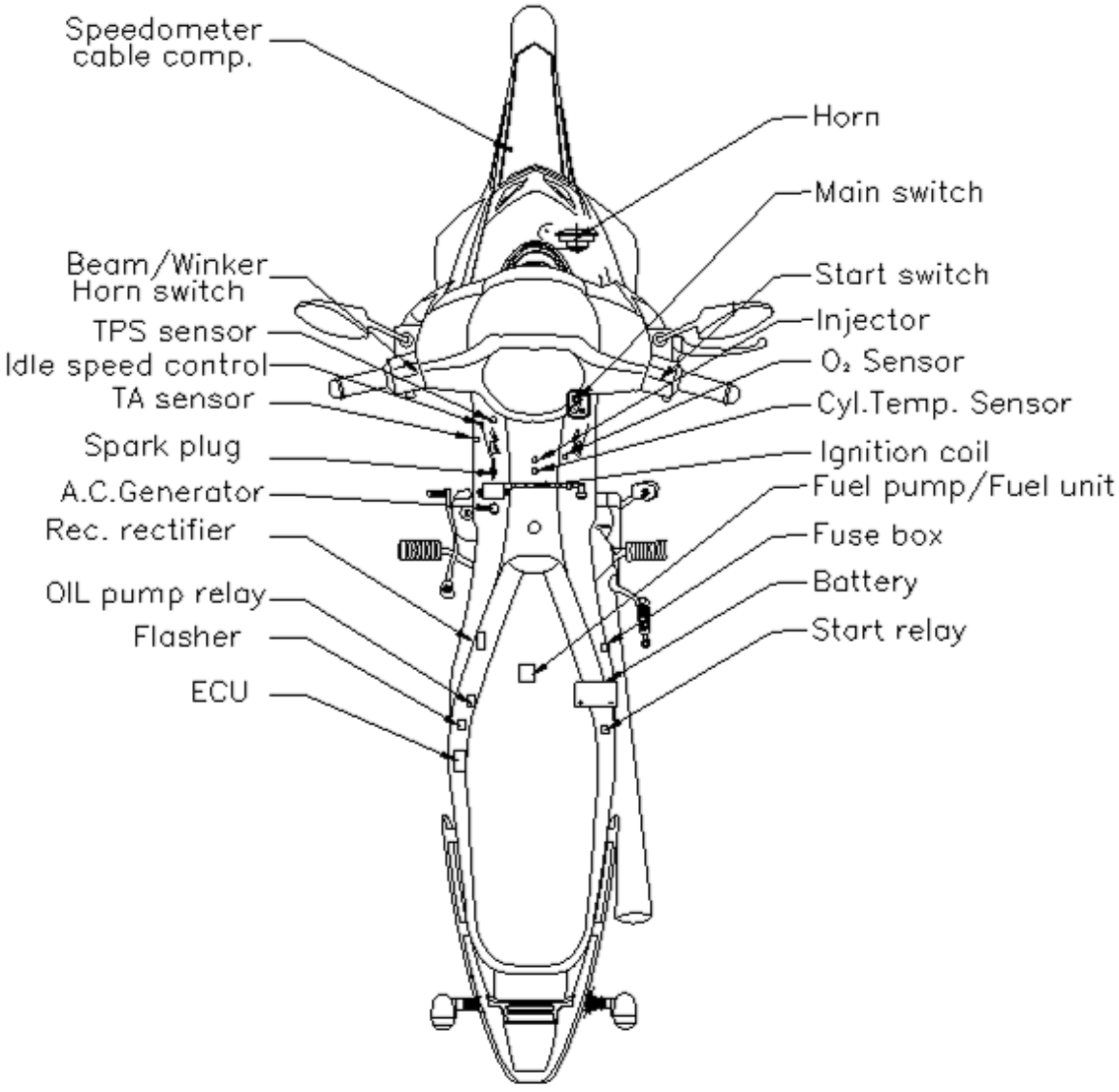
• Replace the front side muffler pipe gasket if worn or deformed.

Torque Value:

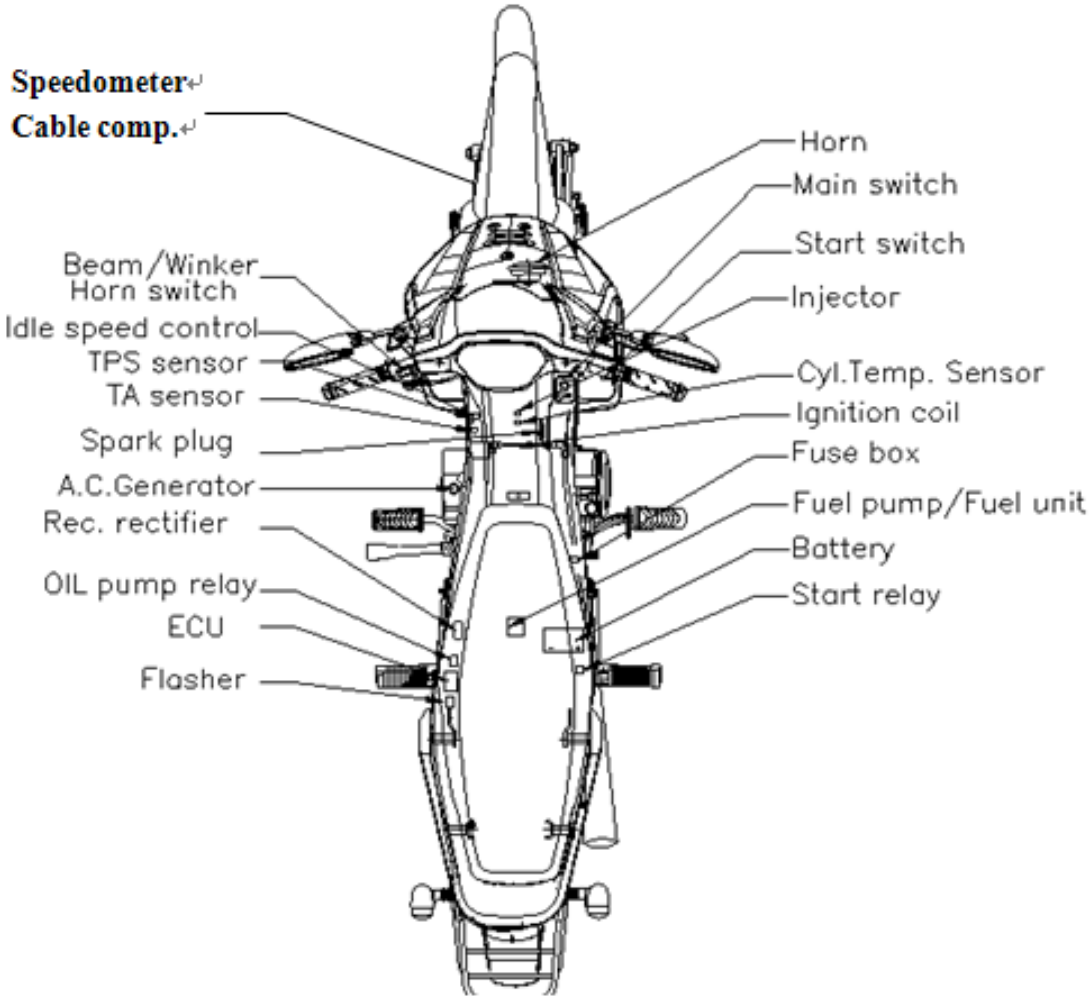
Muffler mounting bolt:
20~ 30N • m
Muffler mounting nut
20 ~ 30N • m



Mechanism Diagram



Mechanism Diagram



Precautions in Operation

- When removing the battery, the disconnection sequence of cable terminals shall be strictly observed. (First disconnect the negative cable terminal, next, the positive cable terminal.)
- The model of the spark plug and the tightening torque.
- The ignition timing.
- Adjustment of headlight.
- Removal and installation of AC generator.
- The maintenance-free battery requires no inspection of electrolyte level and refilling of distilled water.
- To recharge the battery, remove the battery from rack .
- Unless in emergency, never rapid-charge the battery.
- The voltage must be checked with the voltmeter while charging the battery.
- As ECU assembly does not require an ignition timing check. In case ignition timing is incorrect, check ECU and AC generator. Verify with an ignition timing light after replacement if necessary.

Specification

Charging system

		Specification
Battery	Capacity	12V6Ah
	Charging rate	0.6A / 5~10h (standard) 3A / 1 h (rapid charging)
Leak current		Below 10mA
Charging current		0.6A / 1500 rpm
Control voltage in charging		14.5±0.5 V / 1500 rpm

Ignition system

Description		Specification
Spark plug	Model	TORCH B8RTC (Recommended)
	Gap	0.6~0.7 mm
Ignition coil and resistance	Primary winding	4.5Ω±20%
	Secondary winding	Without cap:15 KΩ± 20%
		With cap:20 KΩ± 20%
Crank shaft position sensor resistance (20℃)		**150Ω±15Ω**
Ignition timing advance	At idle speed	BTDC 10° / 1650 rpm
	Full advanced	BTDC 30°

Precautions in Operation

- When removing the battery, the disconnection sequence of cable terminals shall be strictly observed. (First disconnect the negative cable terminal, next, the positive cable terminal.)
- The model of the spark plug and the tightening torque.
- The ignition timing.
- Adjustment of headlight.
- Removal and installation of AC generator.
- The maintenance-free battery requires no inspection of electrolyte level and refilling of distilled water.
- To recharge the battery, remove the battery from rack.
- Unless in emergency, never rapid-charge the battery.
- The voltage must be checked with the voltmeter while charging the battery.
- As ECU assembly does not require an ignition timing check. In case ignition timing is incorrect, check ECU and AC generator. Verify with an ignition timing light after replacement if necessary.

Specification

Charging system

		Specification
Battery	Capacity	12V5Ah
	Charging rate	0.5A / 6~10h (standard) 3A / 1h (rapid charging)
Leak current		Below 10mA
Charging current		0.6A / 1500 rpm
Control voltage in charging		14.5±0.5 V / 1500 rpm

Ignition system

Description		Specification
Spark plug	Model	TORCH B8RTC (Recommended)
	Gap	0.6~0.7 mm
Ignition coil and resistance	Primary winding	4.5Ω±20%
	Secondary winding	Without cap:15 KΩ± 20%
		With cap:20 KΩ± 20%
Crankshaft position sensor resistance (20℃)		**150Ω±15Ω**
Ignition timing advance	At idle speed	BTDC 10° / 1650 rpm
	Full advanced	BTDC 30°

Troubleshooting

No voltage
- Battery over discharged
- The cable disconnected
- The fuse is blown
- Improper operation of the main switch
- Low voltage
- The battery is not fully charged
- Poor connection.
- Poor charging system
- Poor voltage regulator

No spark produced by spark plug
- The spark plug is out of work
- The cable is poorly connected, open orshort-circuited
- Poor contact, open or short circuit
- Poor regulator rectifier
- Poor A.C.G.
- Poor connection between ECU and ignition coil
- Poor connection between ECU and main switch
- Poor main switch
- Poor ECU.
- Poor ignition coil
- A.C.G. is out of work

Starter motor does not work
- The fuse is blown
- The battery is not fully charged
- Poor main switch
- Poor starter switch
- Starter relay is out of work
- The starter motor is out of work

Intermittent power supply
- The connector of the charging system becomes loose
- Poor connection of the battery cable
- Poor connection or short-circuit of the discharging system
- Poor connection or short-circuit of the power generation system

Charging system does not operate properly
- Burnt fuse
- Poor contact, open or short circuit
- Poor regulator rectifier
- Poor A.C.G.

Engine does not crank smoothly
- Primary winding circuit
  - Poor ignition coil
  - Poor connection of cable and connectors
  - Poor main switch
- Secondary winding circuit
  - Poor ignition coil
  - Poor spark plug
  - Poor ignition coil cable
  - Current leakage in the spark plug
- Incorrect ignition timing
  - Poor ACG
  - Poor ECU

Weak starter motor
- Poor charging system
- The battery is not fully charged
- Poor connection in the windings
- The motor gear is jammed by foreign material

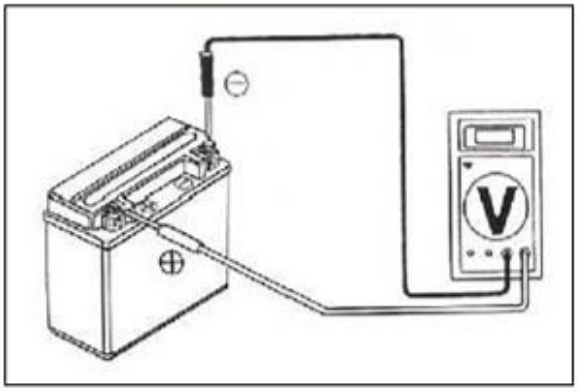
Starter motor is working, but engine does not crank
- Poor starter motor pinion
- The starter motor runs in reverse direction
- Poor battery

Battery

Removal
remove the R.body cover, and remove battery cover.
Disconnect the negative cable terminal first, then the positive cable terminal.

Remove the battery.

Voltage Check
Use the digital voltmeter to check the voltage of the battery.
Voltage:
Fully charged: 12.8V ↑ at 20℃
Undercharged: Below 12.0 V at 20℃

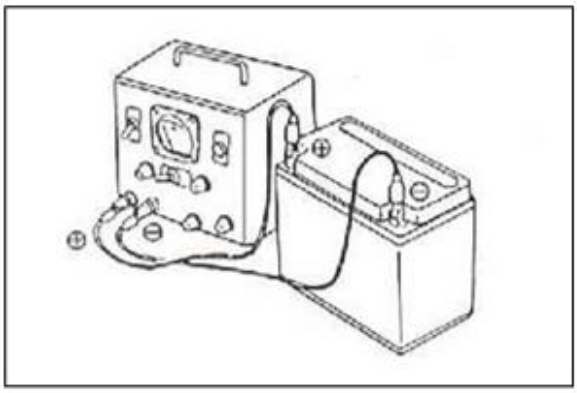


⚠ Warning

- Keep flames away while recharging.
- Charging is completely controlled by the ON/OFF switch on the charger, not by battery cables.

Charging
Connect the positive terminal (+) of the charger to the battery positive terminal (+).
Connect the negative terminal (-) of the charger to the battery negative terminal (-).

	Standard	Maximum
Charging current	0.6A	3A
Charging time	5~10 h	1 h



⚠ Warning

- Keep flames away while recharging.
- Charging is completely controlled by the ON/OFF switch on the charger, not by battery cables.

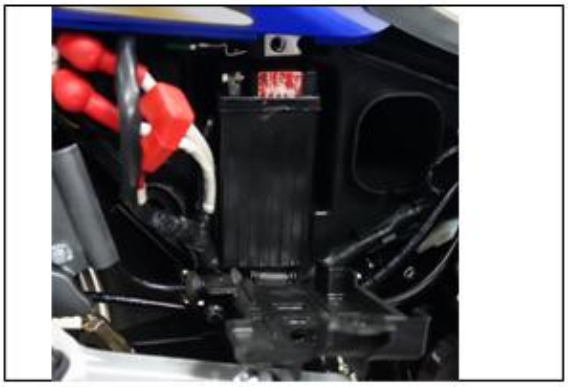
⚠ Caution

- Never rapid charge the battery unless in emergency.
- Verify the battery is recharged with current and duration prescribed above.
- Large current and fast time to charge will render damage to the battery.

When installing the battery, coat the cable terminal with grease.

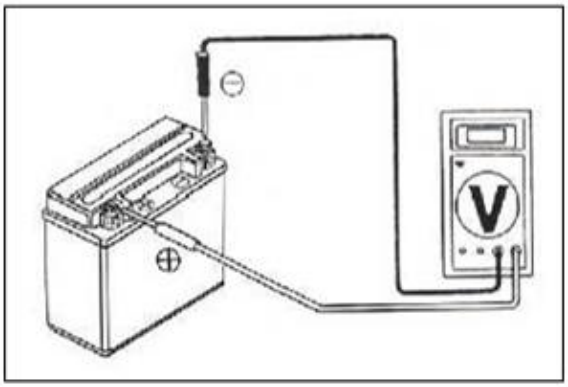
Battery

Removal
remove the R.body cover, and remove battery cover.
Disconnect the negative cable terminal first, then the positive cable terminal.



Remove the battery.

Voltage Check
Use the digital voltmeter to check the voltage of the battery.
Voltage:
Fully charged: **12.8V ↑ at 20℃**
Undercharged: **Below 12.0 V at 20℃**



⚠ Warning

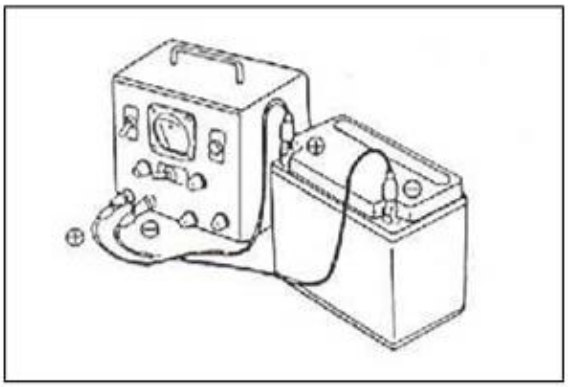
- Keep flames away while recharging.
- Charging is completely controlled by the ON/OFF switch on the charger, not by battery cables.

Charging
Connect the positive terminal (+) of the charger to the battery positive terminal (+).
Connect the negative terminal (-) of the charger to the battery negative terminal (-).

	Standard	Maximum
Charging current	0.5A	3A
Charging time	6~10 h	1 h

⚠ Warning

- Keep flames away while recharging.
- Charging is completely controlled by the ON/OFF switch on the charger, not by battery cables.



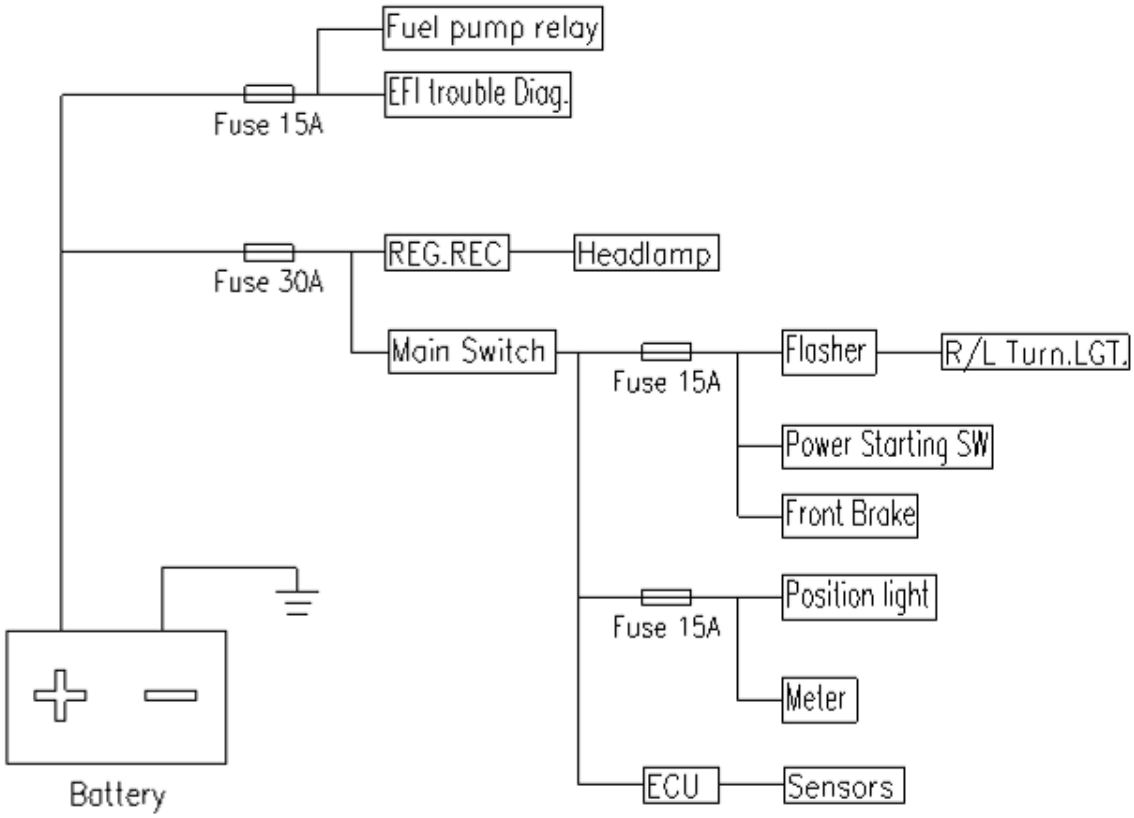
⚠ Caution

- Never rapid charge the battery unless in emergency.
- Verify the battery is recharged with current and duration prescribed above.
- Large current and fast time to charge will render damage to the battery.

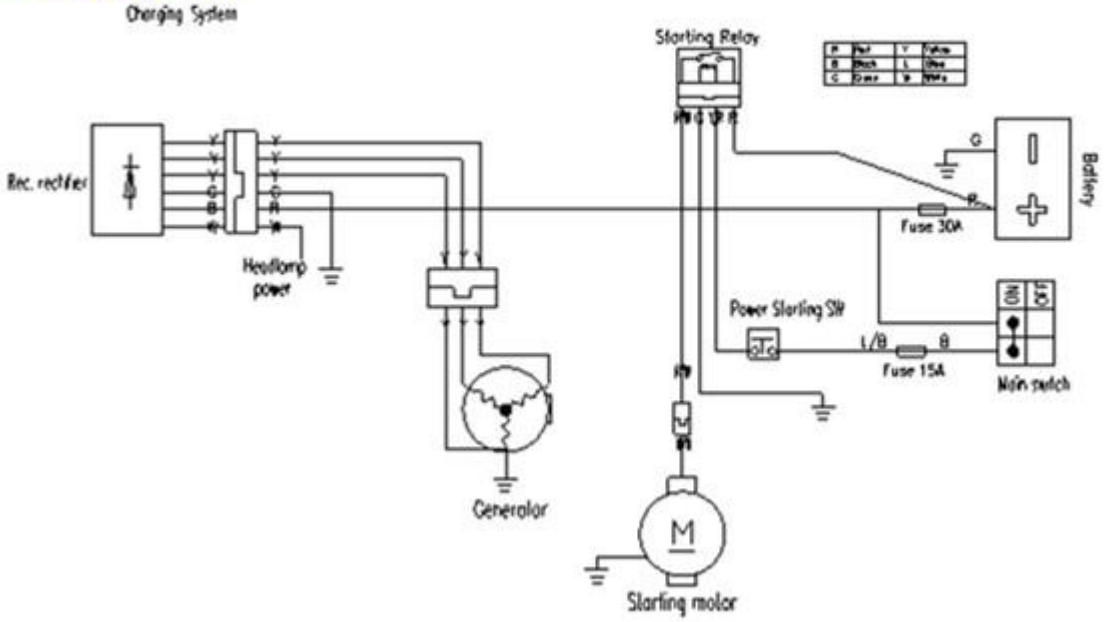
When installing the battery, coat the cable terminal with grease.

Fuse

Fuse circuit diagram



Charging System

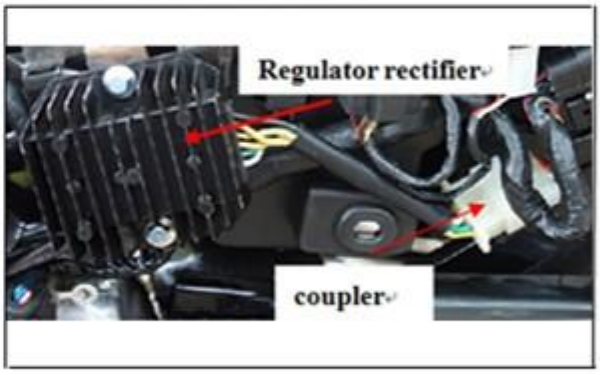


Inspection on regulator rectifier wire
Remove the bodycovers.
Disconnect one 6 pin couplers of the regulator rectifier.
Inspect the rectifier coupler to the wire harness passes the condition.

Item	Check Points	Standard Value
Main switch connection	R–B	Battery voltage (ON)
Battery connection	R–G	Battery voltage
Charging coil	Y–Y	0.5-1.3

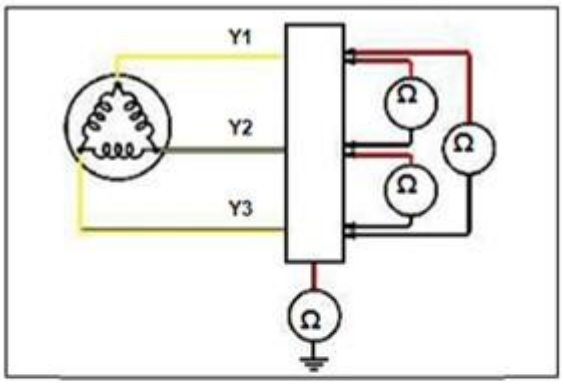
If the readings measured are not normal, check parts in the circuit.

If the parts are normal, then trouble is in the wiring.
If there is nothing wrong with parts and wiring, replace the regulator rectifier.



Inspection on AC. Generator coil
Remove body covers.
Disconnect 4 pin couplers of the generator coil.
Connect an ohmmeter to the each terminal end.
Check the continuity of the each terminal end, and engine ground with short circuit.
If there is no continuity or short circuit, replace the AC. Generator.

	Ω
Y1	0.5~1.3
Y2	0.5~1.3
Y3	0.5~1.3

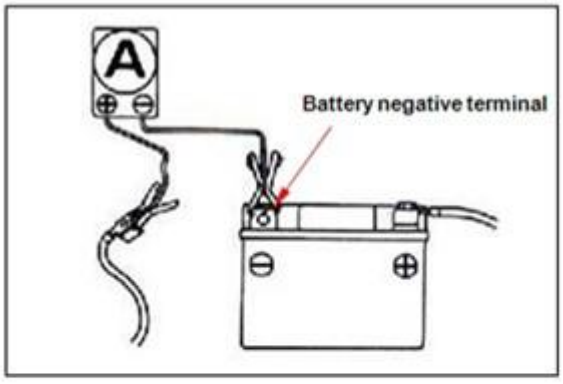


Current Leakage Inspection
Turn the main switch OFF, and remove the negative cable terminal (-) from the battery.
Connect an ammeter between the negative cable terminal and the battery negative terminal.
Disconnect each cable one by one and take measurement of the current of each cable to locate the short circuit.
Allowable current leakage: Less than 10mA

⚠ Caution

- In the current leakage test, set the current range at the largest scale, then gradually decrease to the lower scale as the test process goes to avoid possible damage to the ammeter and the fuse.
- Do not turn the main switch to ON position during test.

If the leaked current exceeds the specified value, it may indicate a short circuit.



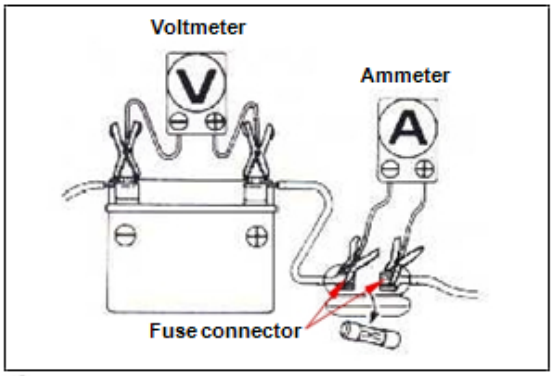
Current Leakage Inspec
Turn the main switch O
negative cable terminal
Connect an ammeter b
terminal and the battery
Disconnect each cable
measurement of the cu
locate the short circuit.
Allowable current leak

⚠ Caution

In the current leakag
range at the largest s
decrease to the lowe
goes to avoid possib
and the fuse.
Do not turn the main
during test.

f the leaked current ex
nay indicate a short cir

Inspection on Charging Voltage



⚠ Caution

- Before conducting the inspection, be sure that the battery is fully charged. If undercharged, the current changes dramatically.
- Use a fully charged battery having a voltage larger than 13.0 V to prevent the current fluctuation.
- While starting the engine, the starter motor draws large amount of current from the battery.

After the engine is warmed up, replace the original battery with a fully charged one.
Connect a digital voltmeter to the battery terminals.
Connect an ammeter between both ends of the main fuse.

⚠ Caution

- When the probe is reversibly connected, use a voltmeter having an indication that the current flows from the positive or the negative direction and the measurement should be at zero, ammeter at one direction only.

⚠ Caution

Do not use any short-circuit cable.
It is possible to measure the current by connecting an ammeter between the battery positive terminal and the cable positive terminal; however, while the starter motor is activated, the surge current draws from the battery may damage the ammeter. Use the kick starter to start the engine to prevent this happen.
The main switch shall be turned to OFF position during the process of inspection. Never tamper with the ammeter and the cable while there is current flowing through. It may damage the ammeter.

Connect a tachometer.
Turn on the headlight to high beam and start the engine.
Accelerate the engine to the specified revolution per minute and measure the charging voltage.

Specified Charging Current:
1.2 A / 6000 rpm
Control Charging Voltage:
14 V/1500 rpm

⚠ Caution

⚠ When it comes to replacement, make sure that the current and voltage of the new battery are the same as the old one.

The following problems are related to the charging system; follow the instructions provided in the checking list to correct it if any one of the problems occurs.

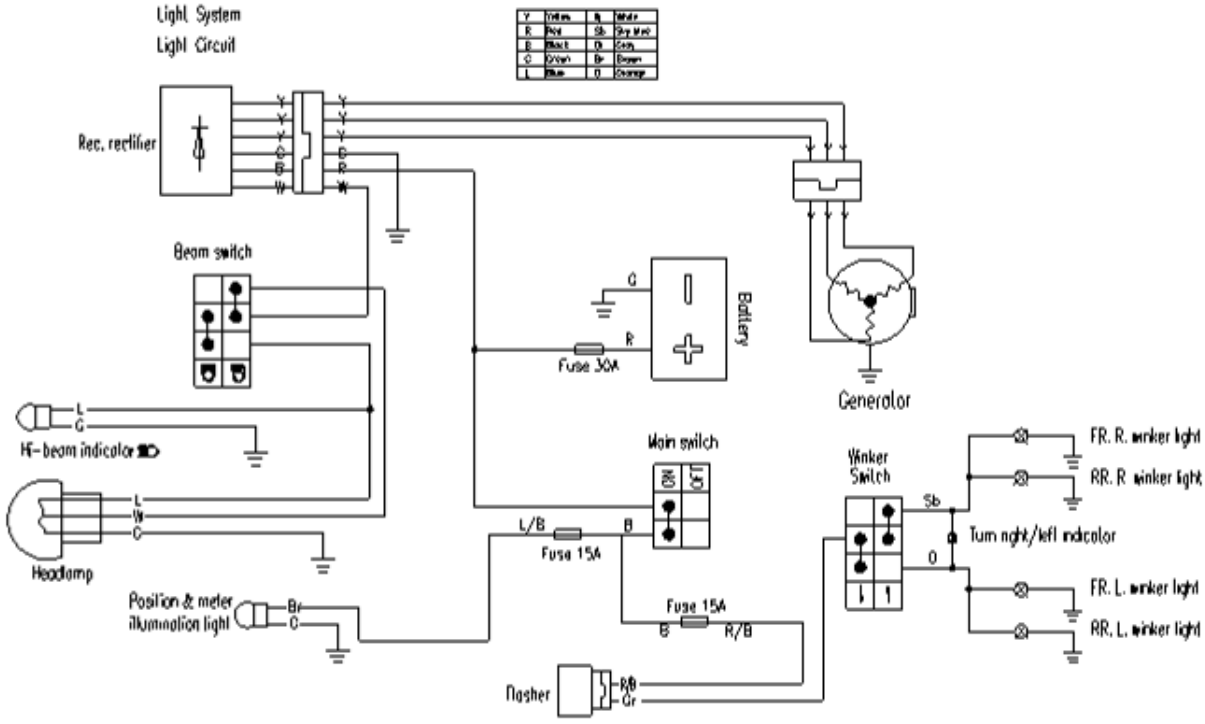
1. The charging voltage can not exceed the voltage between two battery terminals and the charging current is in the discharging direction.
2. The charging voltage and current are too much higher than the standard values.

The following problems are not related to the charging systems; correct it if any by following steps indicated in the checking list.

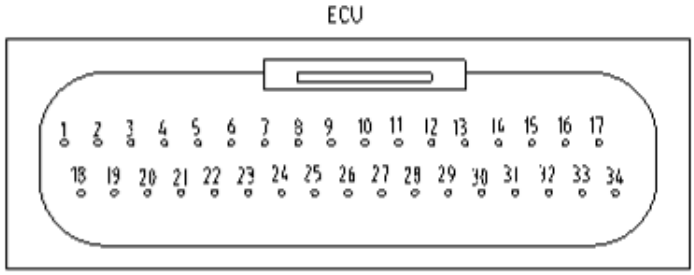
(1) The standard charging voltage and current can only reach when the revolution of the engine exceeds the specified rpm.
- Light bulbs used exceed their rate and consume too much power.
- The replaced battery is aged and does not have enough capacity.

(2) The charging voltage is normal, while the current is not.
- The replaced battery is aged and does not have enough capacity.
- Battery used does not have enough electricity or is over charged.
- The fuse of the ammeter is blown.
- The ammeter is improperly connected.

(3) The charging current is normal, but the voltage is not.
-The fuse of the voltmeter is blown.

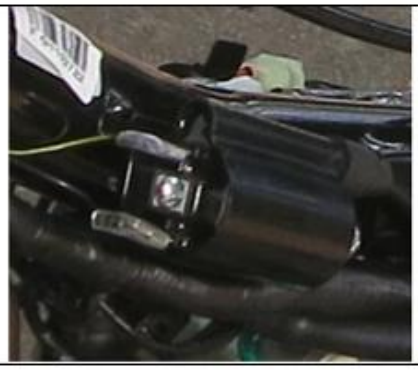


ECU. coupler (ECU. side)



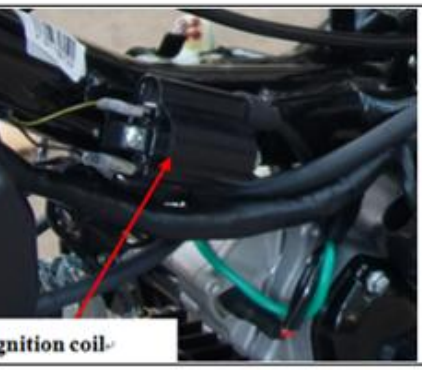
13 pin(R/Y): Drive components Power.
12pin(L/Y): Crankshaft position sensor positive
03 pin(G): Crankshaft position sensor negative
01 pin(B/Y): Ignition coil

Inspection on ignition coil
Remove the left body cover.
Disengage the connector of the ignition coil.
Measure the resistance between the terminals of the primary winding.
Standard resistance: 4.5Ω±20%



Replacement of ignition coil
Remove the cap from the spark plug.

Loosen 2 bolts and replace the ignition coil if necessary.



Inspection of crank position sensor
Disconnect the coupler of the crank position sensor and measure the resistance between the terminals of green/white and blue/white.
Standard resistance: 150±15Ω

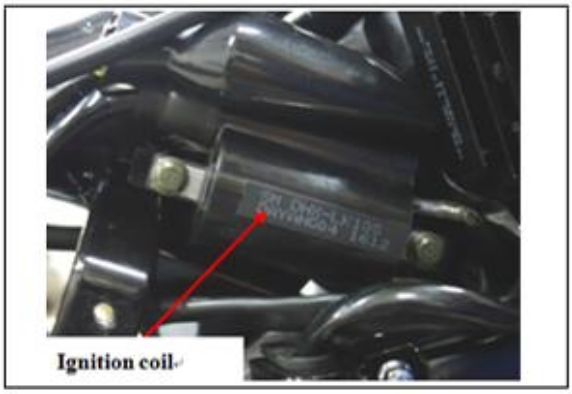
⚠Caution

It is not necessary to remove the coil from the engine during this process.

Inspection on ignition coil
Remove the left body cover.
Disengage the connector of the ignition coil.
Measure the resistance between the terminals of the primary winding.
Standard resistance: 4.5Ω±20%

Replacement of ignition coil
Remove the cap from the spark plug.

Loosen 2 bolts and replace the ignition coil if necessary.

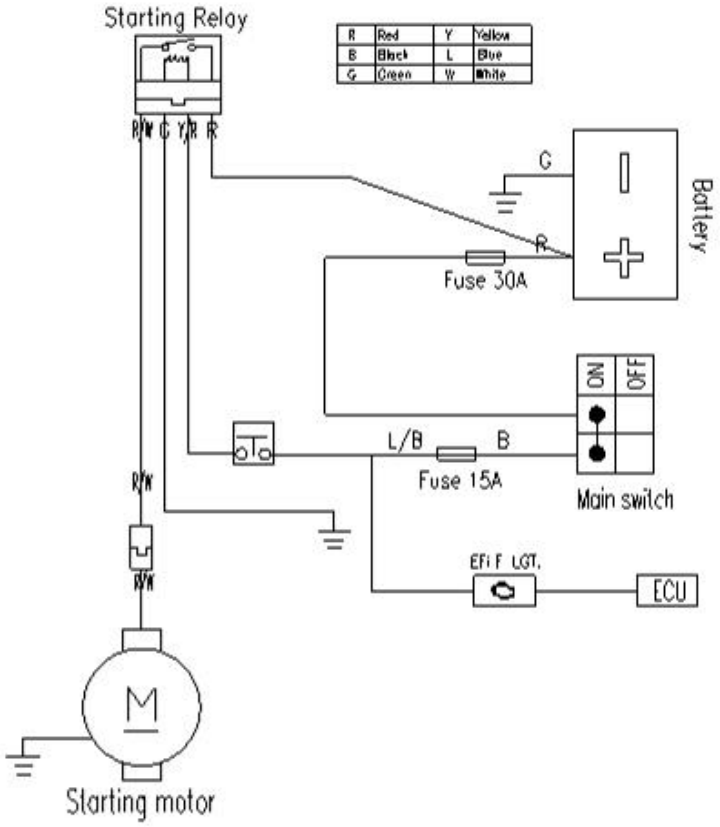


Inspection of crank position sensor
Disconnect the coupler of the crank position sensor and measure the resistance between the terminals of green/white and blue/white.
Standard resistance: 150Ω±15Ω

⚠Caution

It is not necessary to remove the coil from the engine during this process.

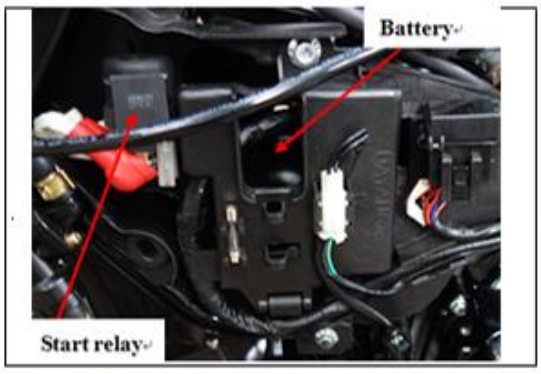
Starting System



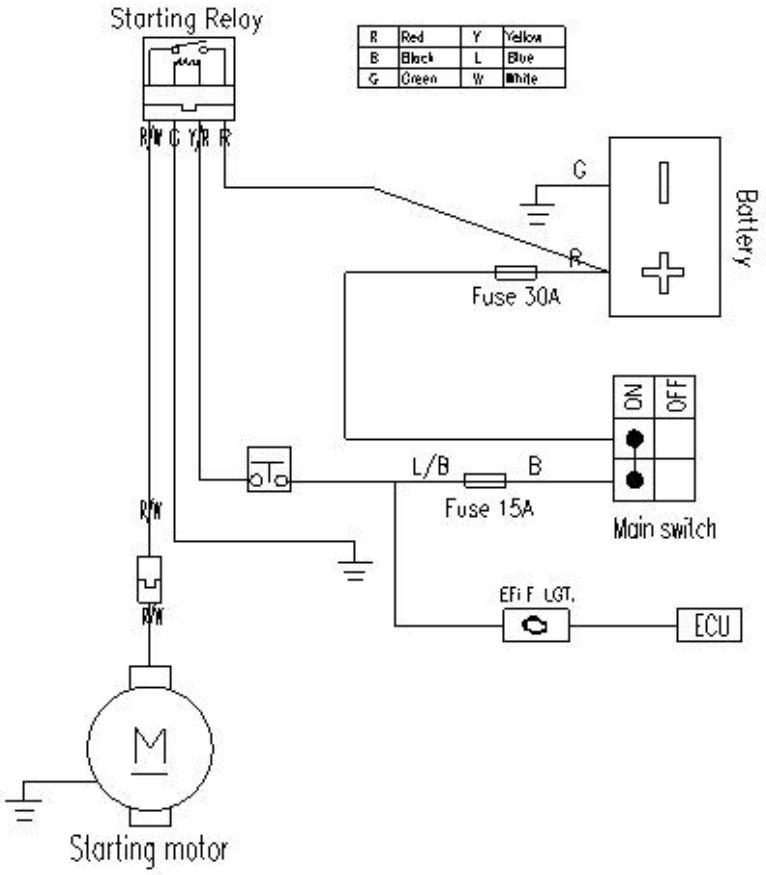
Inspection of starter relay
Open the main switch.

Push the starter switch.
If a sound of "Looh Looh" is heard, it indicates the relay is working properly.

Open the R.body cover, and remove battery cover.
Disconnect the negative cable terminal of the battery.
Disconnect the cable positive terminal from the start relay.



Starting System



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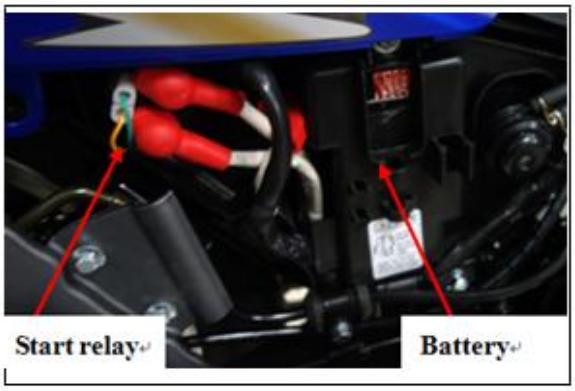
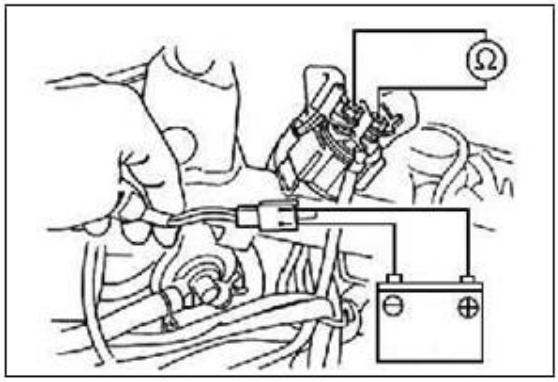
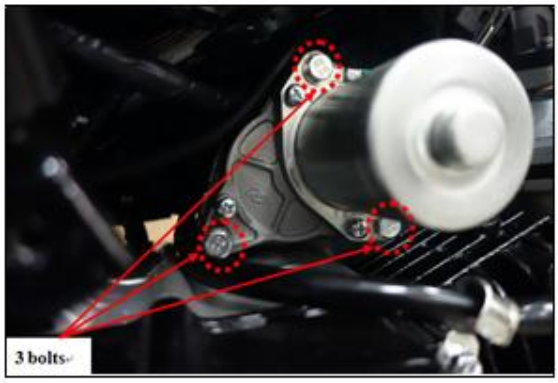


Disconnect the positive cable of the starter motor.
Disconnect the coupler of the relay.
Connect an ohmmeter to the large terminal end.
Connect the yellow/red cable to the battery positive terminal and the green cable to the battery negative terminal.
Check the continuity of the large terminal end.
If there is no continuity, replace the relay.



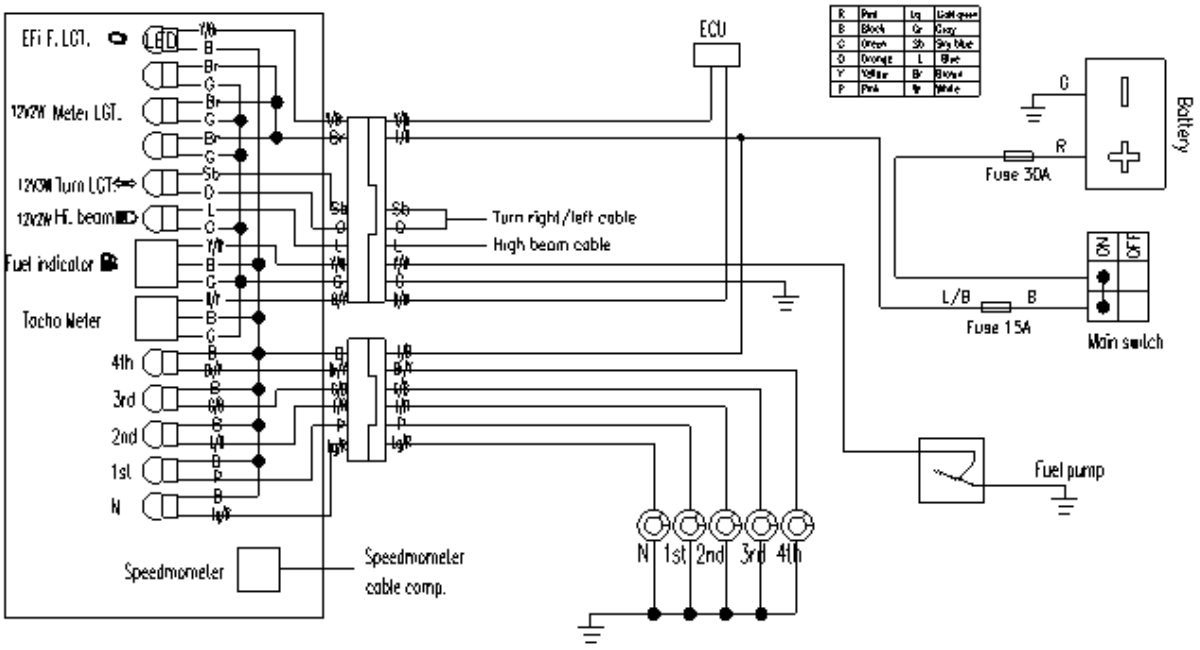
Removal of Starter motor
Turns off the main switch
Remove the body cover.
Disconnect the coupler of the start relay.
Disconnect the cable negative terminal of the battery.
Disconnect the starter motor power cable.
Loosen 3 bolts & remove starter motor.

Installation of starter motor
Install in reverse order of removal procedures.



Meter

Meter circuit diagram



Removal of meter
Remove handle FR. /RR.cover, speedometer cable comp.

Disconnect the coupler of the speedometer, and take off the meter.

Loosen 2 screws from handle RR.cover.
Remove the speedometer.

Installation of meter
Install in reverse order of removal procedures

Removal of meter
Remove handle FR. /RR.cover, speedometer cable comp.

Disconnect the coupler of the speedometer, and take off the meter.

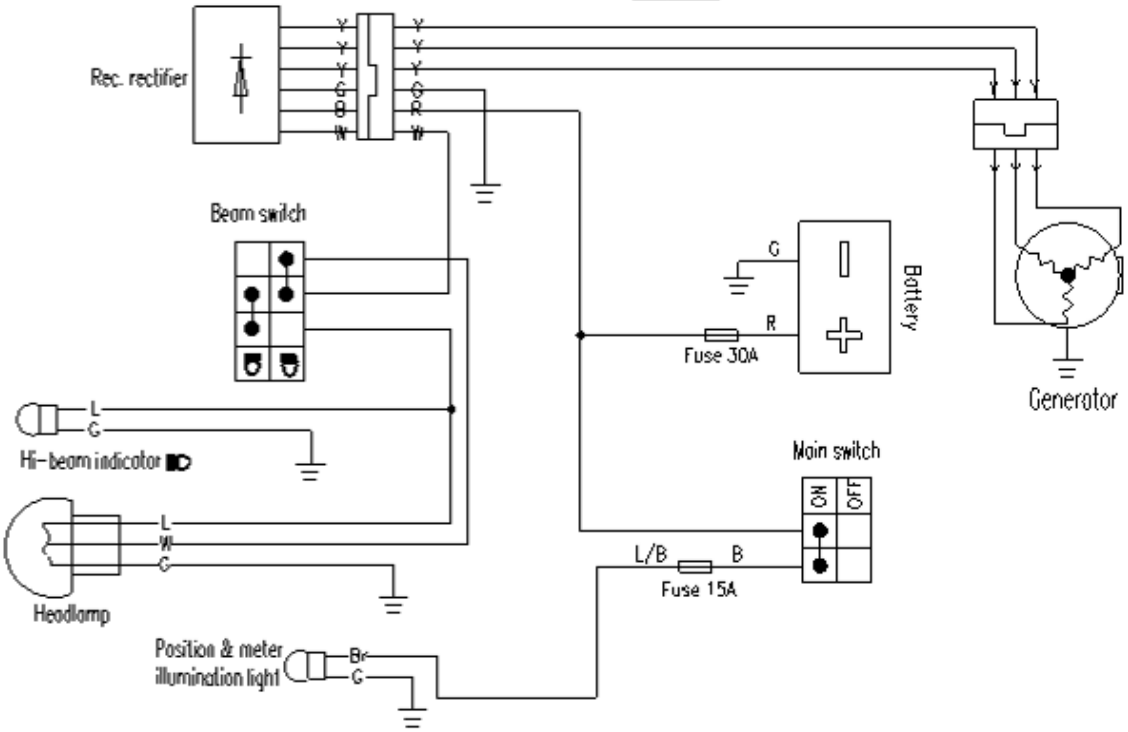
Loosen 2 screws from handle RR cover.
Remove the speedometer.

Installation of meter
Install in reverse order of removal procedures

Light / Bulb

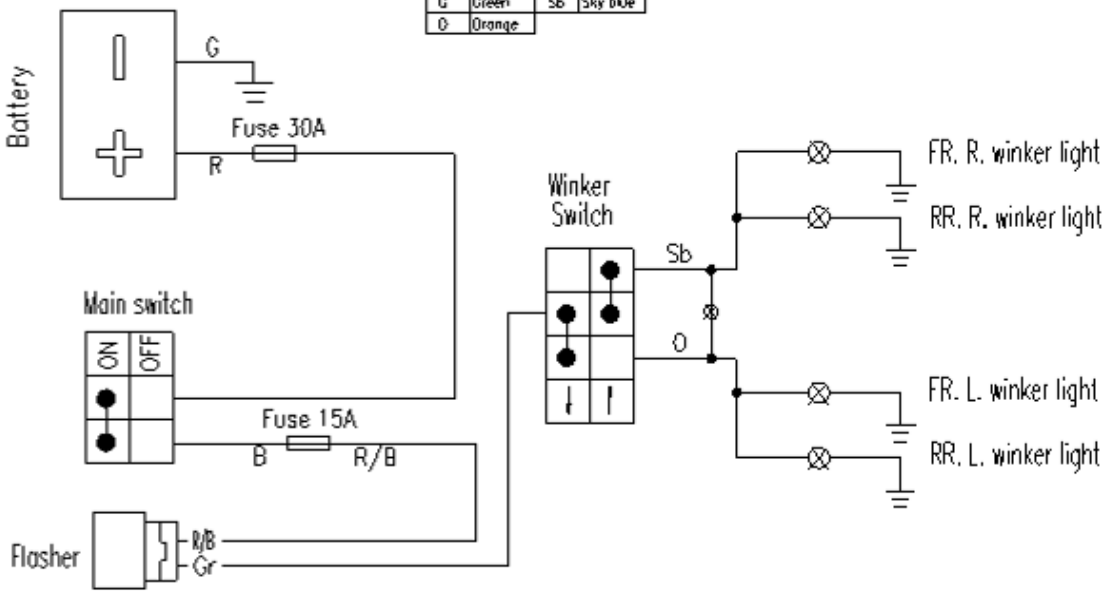
Headlight and position light circuit diagram

Y	Yellow	W	White
R	Red	L/B	Blue/Black
B	Black	Gr	Gray
G	Green	Br	Brown
L	Blue		



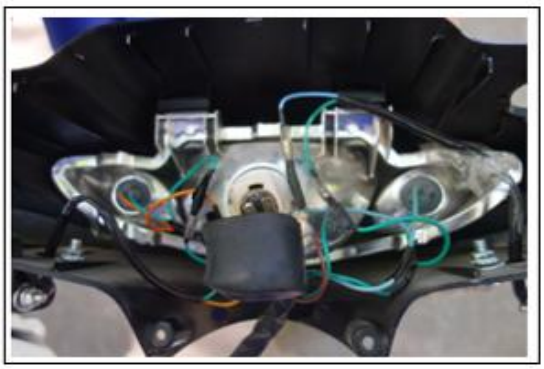
Winker light circuit diagram

R	Red	R/B	Red/Black
B	Black	Gr	Gray
G	Green	Sb	Sky blue
O	Orange		



Headlight bulb replacement

Pull out the rubber socket, and press the 2 springs, then remove light bulb.



Specification:
Lo-beam bulb 12V 35W (S2)
Hi-beam bulb 12V 35W (S2)

⚠ Caution

- It would be much easier to replace the light bulb if dismounting the front cover.
- Never touch the bulb with bare fingers, which may create a heat point and lead to premature bulb failure.
- Clean the fingerprint left on the bulb with alcohol.

Installation
Install the bulb of the headlight in reverse order of removal.

Front winker bulb replacement

Pull the light lens out with your hand

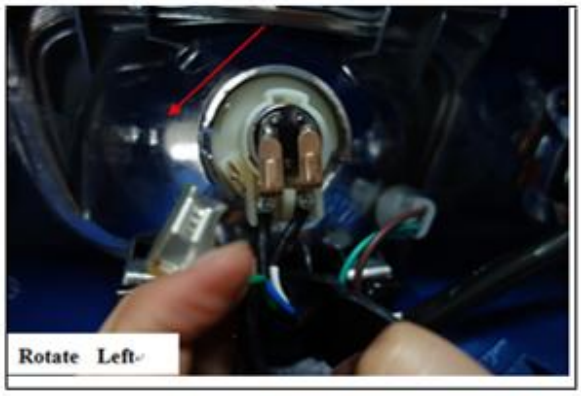
Hold the winker bulb socket.
Rotate the bulb and remove it.
Replace with new bulb if necessary.

Specification:
Winker light bulb 12V 10W

Installation
Install the bulb of the headlight in reverse order of removal.

Headlight bulb replacement

Pull out the rubber socket, and press the 2 springs, then remove light bulb.



Specification:
Lo-beam bulb 12V 35W (S2)
Hi-beam bulb 12V 35W (S2)

⚠ Caution

- It would be much easier to replace the light bulb if dismounting the front cover.
- Never touch the bulb with bare fingers, which may create a heat point and lead to premature bulb failure.
- Clean the fingerprint left on the bulb with alcohol.

Installation
Install the bulb of the headlight in reverse order of removal.

Front winker bulb replacement
Loosen 1 screws from the winker cover.
Rotate the winker bulb and remove it.
Replace with new bulb if necessary.
Specification:
Winker light bulb 12V 10W

Installation
Install the bulb of the headlight in reverse order of removal.

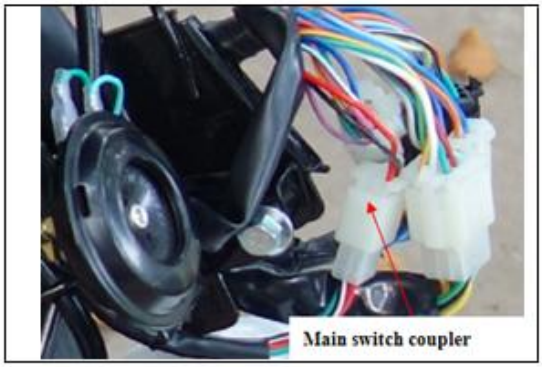
Switch / Horn

Main switch

Inspection

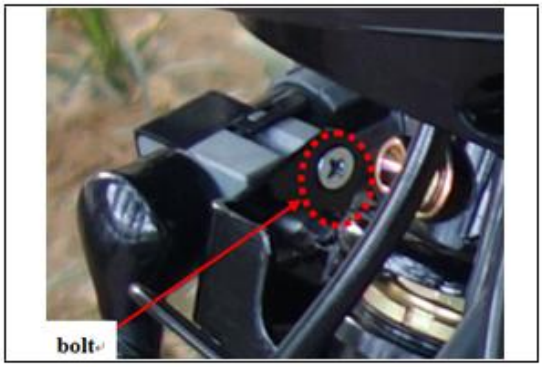
Remove the front cover.
Disconnect the main switch coupler.
Check the continuity between two points as indicted below

	E	IG	HO	BAT
LOCK				
OFF				
ON			●	●
Wire Color	Green	Black/white	Blake	Red



Replacement of main switch

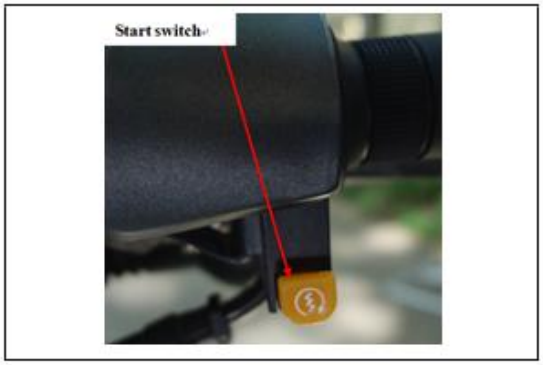
Remove Steering stem.
Disconnect the coupler of the main switch and loosen the mounting bolts (2 bolts).
Remove the main switch.
Install the new main switch and tighten the mounting bolts.
Install the main switch coupler and cap.



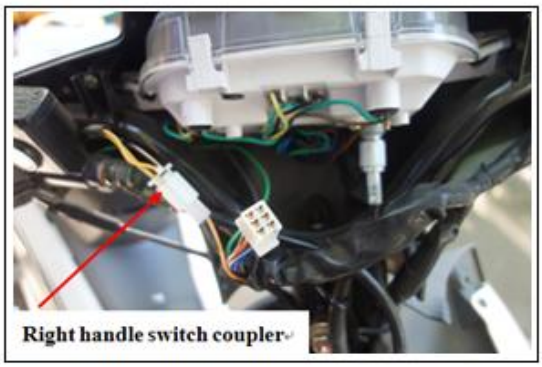
Right handle switch

Remove the handle cover
Disconnect the coupler of right handle switch.
Check the continuity between two points as indicated in the table below

Engine start and stop switch



Pin / Position	HO	BAT	ST	E
⊗				
○	●	●		
FREE				
⚷			●	●
Wire Color	Black	Red	Yellow / Red	Green



Switch / Horn

Main switch

Inspection

Remove the front cover.
Disconnect the main switch coupler.
Check the continuity between two points as indicted below

	E	IG	HO	BAT
LOCK				
OFF				
ON			●	●
Wire Color	Green	Black/white	Blake	Red

Replacement of main switch

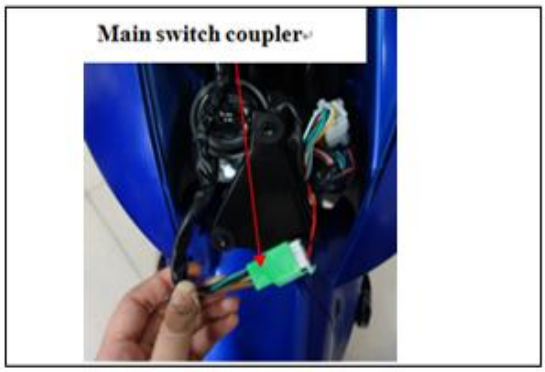
Remove Steering stem.
Disconnect the coupler of the main switch and loosen the mounting bolts (2 bolts).
Remove the main switch.
Install the new main switch and tighten the mounting bolts.
Install the main switch coupler and cap.

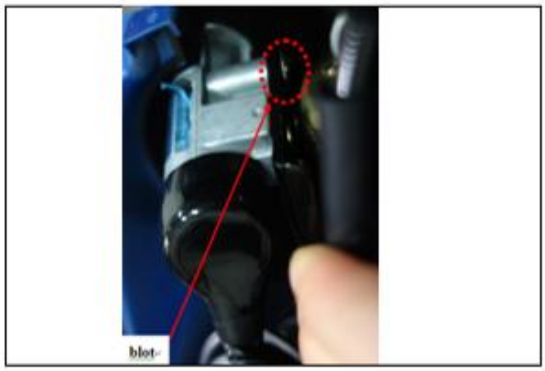
Right handle switch

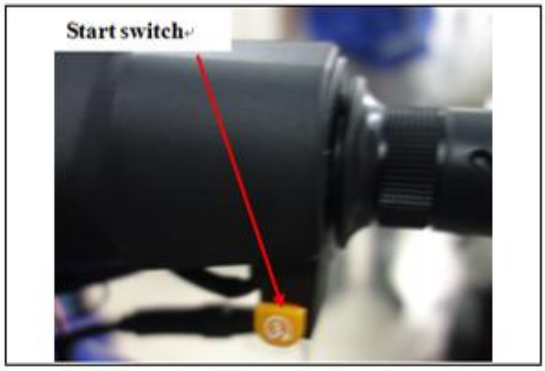
Remove the handle cover
Disconnect the coupler of right handle switch.
Check the continuity between two points as indicated in the table below

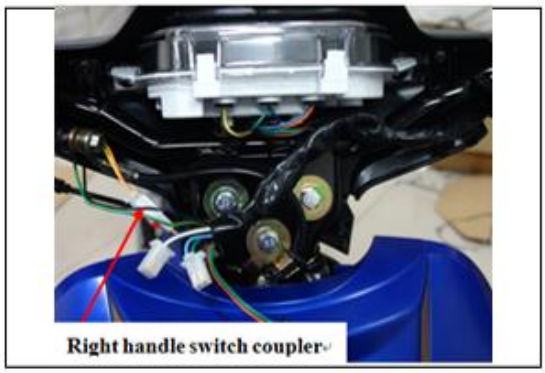
Engine start and stop switch

Pin / Position	HO	BAT	ST	E
⊗				
○	●	●		
FREE				
⏻			●	●
Wire Color	Black	Red	Yellow / Red	Green









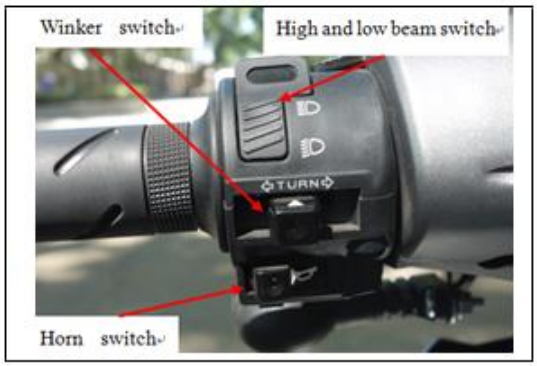
Left handle switch
Remove the handle cover.
Disconnect the coupler of left handle switch.
Check the continuity between two points as indicated in the table below

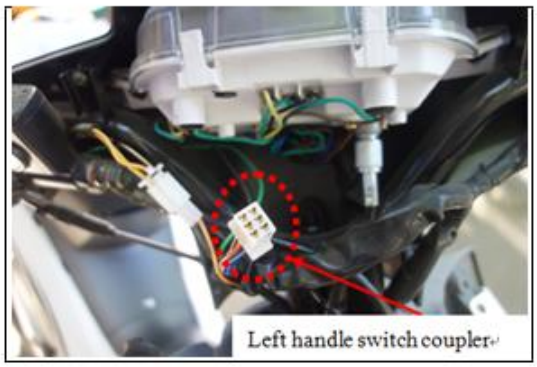
High and low beam switch

Pin / Position	LO	HL	HI
	●	●	
		●	●
Wire color	**White**	**Blue / White**	**Blue**

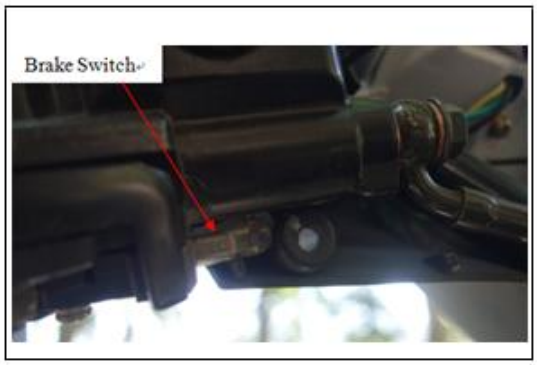
Winker switch

Pin / Position	R	WR	L
	●	●	
		●	●
Wire color	**Sky blue**	**Gray**	**Orange**

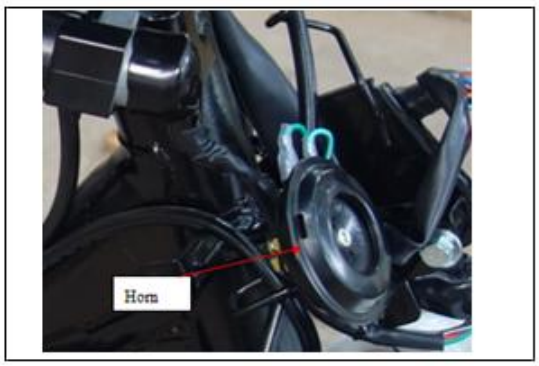


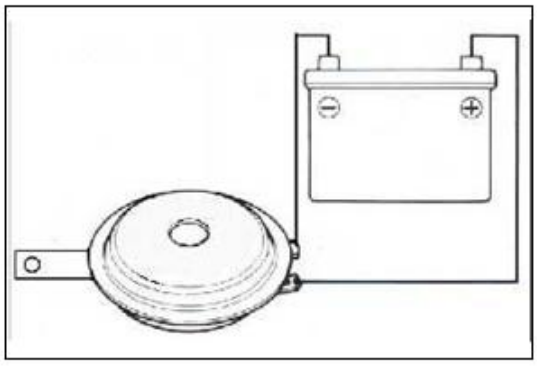


Brake Switch
While grasp the brake lever firmly, the terminals of white/green and green/yellow of the brake should have continuity.
Replace the switch if damaged.



Horn
Remove the front cover.
Apply 12 V power source to two terminals of the horn, the horn should work.
Replace the horn if necessary.





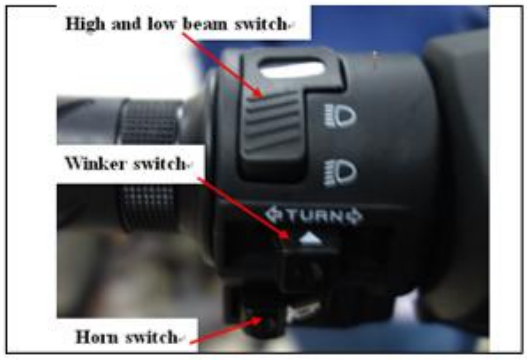
Left handle switch
Remove the handle cover.
Disconnect the coupler of left handle switch.
Check the continuity between two points as indicated in the table below

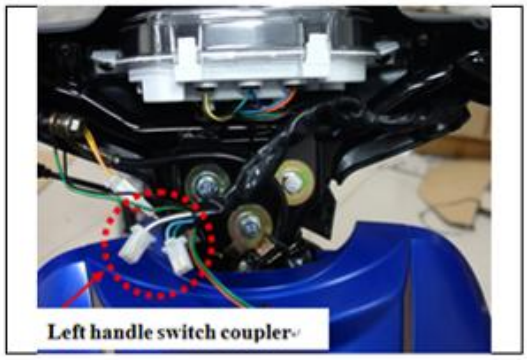
High and low beam switch

Pin / Position	LO	HL	HI
	●	●	
		●	●
Wire color	White	Blue / White	Blue

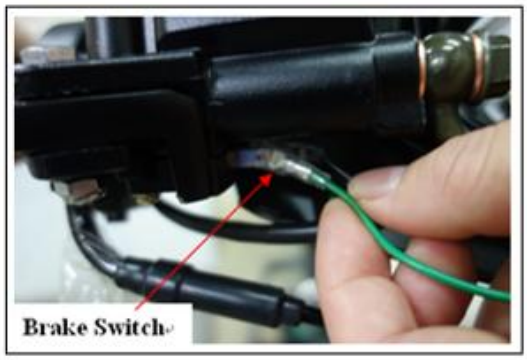
Winker switch

Pin / Position	R	WR	L
	●	●	
		●	●
Wire color	Sky blue	Gray	Orange

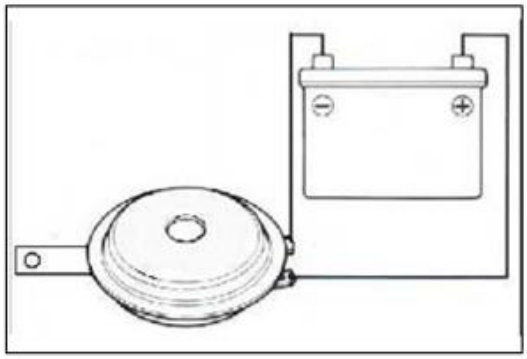




Brake Switch
While grasp the brake lever firmly, the terminals of white/green and green/yellow of the brake should have continuity.
Replace the switch if damaged.

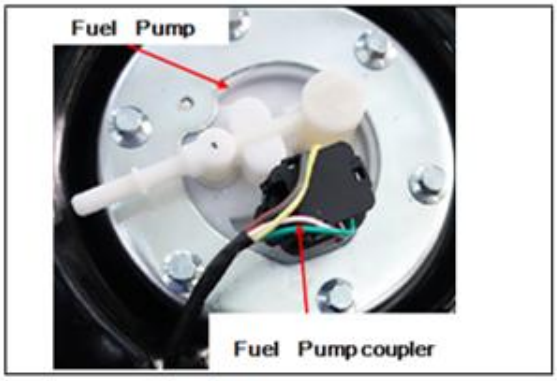


Horn
Remove the front cover.
Apply 12 V power source to two terminals of the horn, the horn should work.
Replace the horn if necessary.



Fuel Unit

Open the seat.
Remove the FUel tank EFI protector.
Remove the HIgh pressure fuel pipe quick connector.
Remove EFI cover
Disconnect the coupler of the fuel unit.
Loosen 6 bolts from fuel unit and remove it.

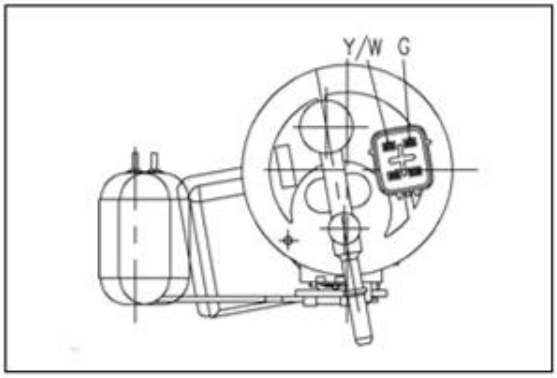


⚠ Caution

- Great care shall be taken not to damage or bend the float arm of the gauge

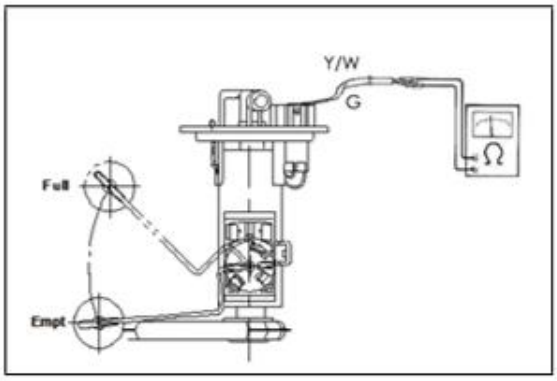
When the float arm shifts to the F position or the E position, the resistance measured shall be as follows:

Position	Resistance
E (Empty)	107~113 Ω
F (Full)	2~6Ω



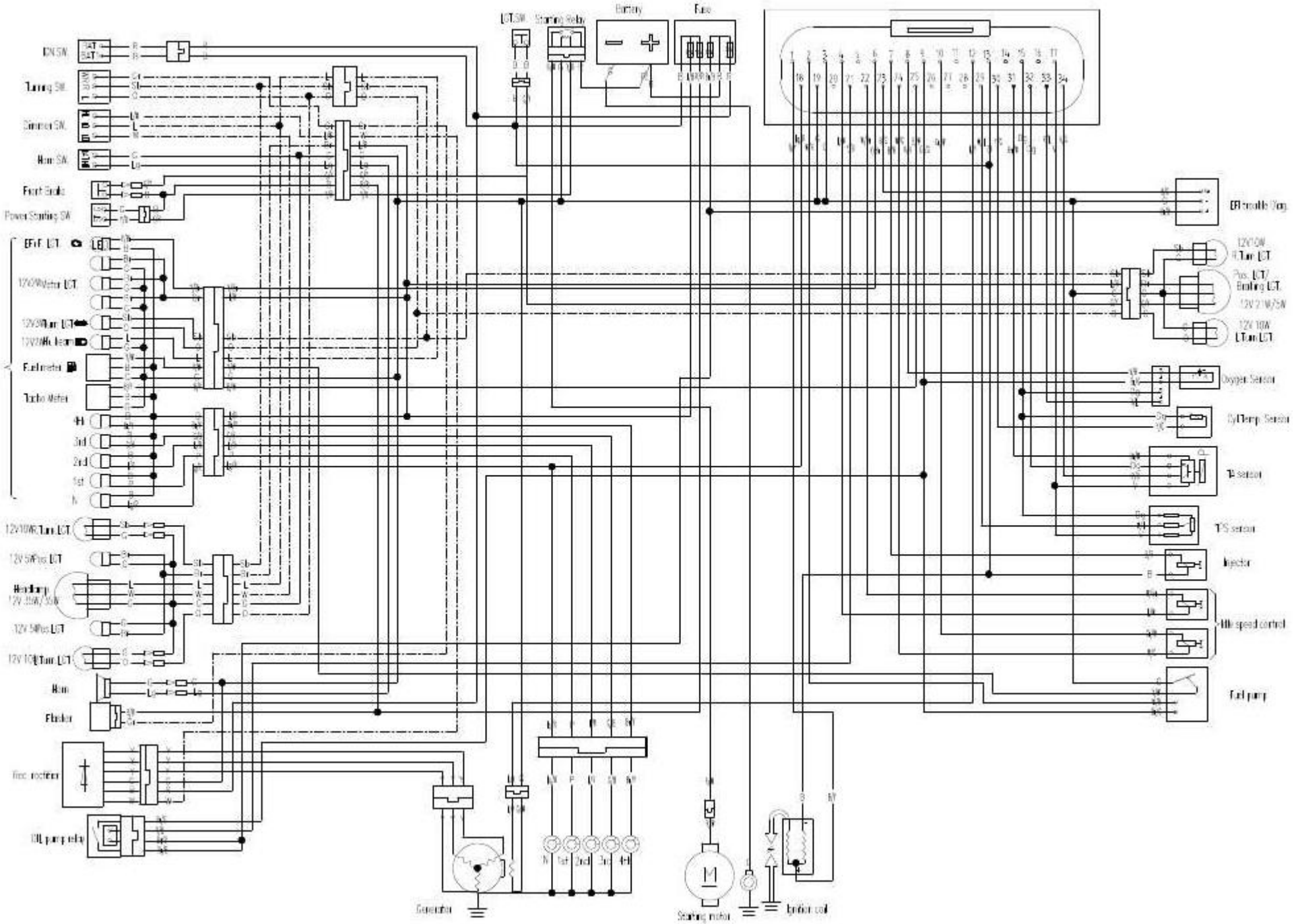
Connect the wiring to the fuel unit and the ohmmeter as shown.
Connect the fuel unit coupler to the wire harness.
Turn on the main switch.
Move the float arm to verify the proper position of the fuel gauge needle indicates.

Arm position	Needle Position
Up (Full)	F (Full)
Down (Empty)	E (Empty)



⚠ Caution

- While conducting the test, turn on the direction indicator lamp to make sure that the battery is in serviceable condition.


IGN SW.
Turning SW.
Dimmer SW.
Horn SW.
Front Brake
Power Starting SW
EFI F. LCT.
12V/9W Meter LCT.
12V 3W Turn LCT
12V 3W Hi. beam
Fuel meter
Tacho Meter
4th
3rd
2nd
1st
N
12V 10W/3 Turn LCT
12V 5W Pos LCT
Headlamp
12V 35W/35W
12V 5W Pos LCT
12V 10W Turn LCT
Horn
Flasher
Rec. rectifier
OIL pump relay
LCT SW
Starting Relay
Battery
Fuse
Generator
Starting motor
Ignition coil
EFI throttle Body
12V 10W
R Turn LCT
Pos. LCT/
Braking LCT
12V 21W/5W
12V 10W
LT turn LCT
Oxygen Sensor
Cyl Temp. Sensor
TP sensor
TPS sensor
Injector
Idle speed control
Fuel pump